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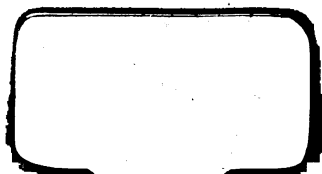
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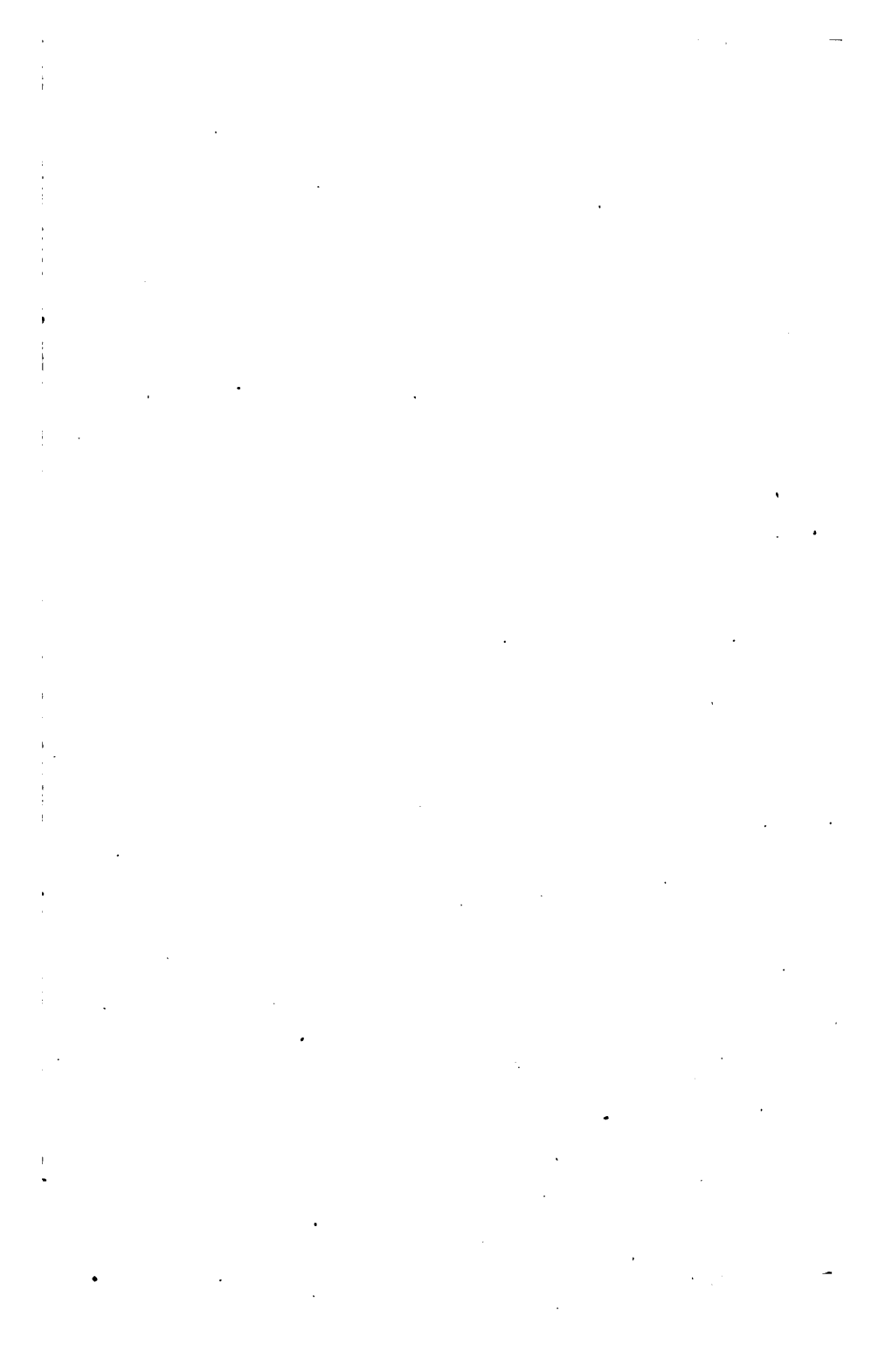
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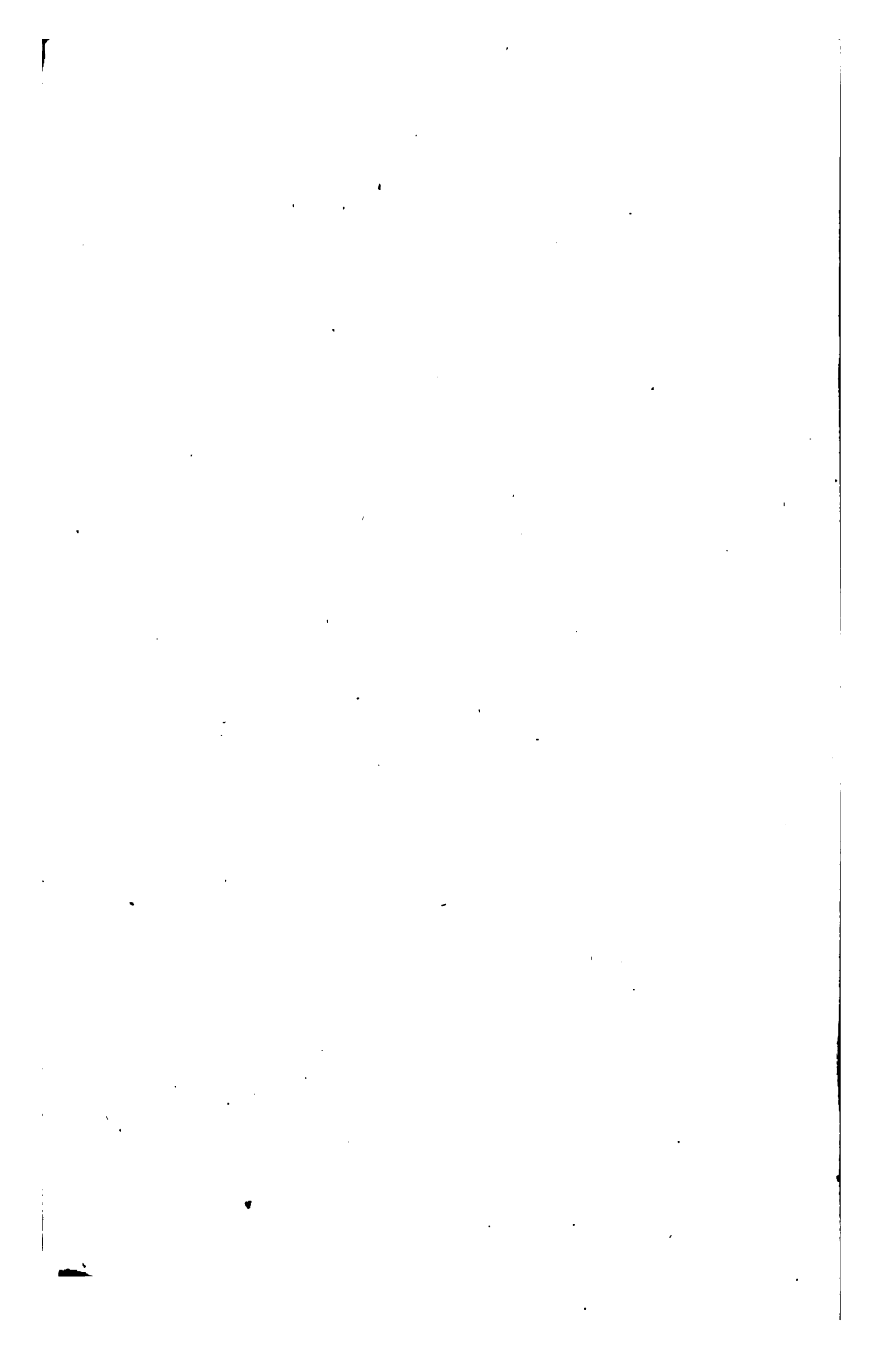
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TOKIO DAIGAKU

(University of Tokio).

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THE

CALENDAR

OF THE

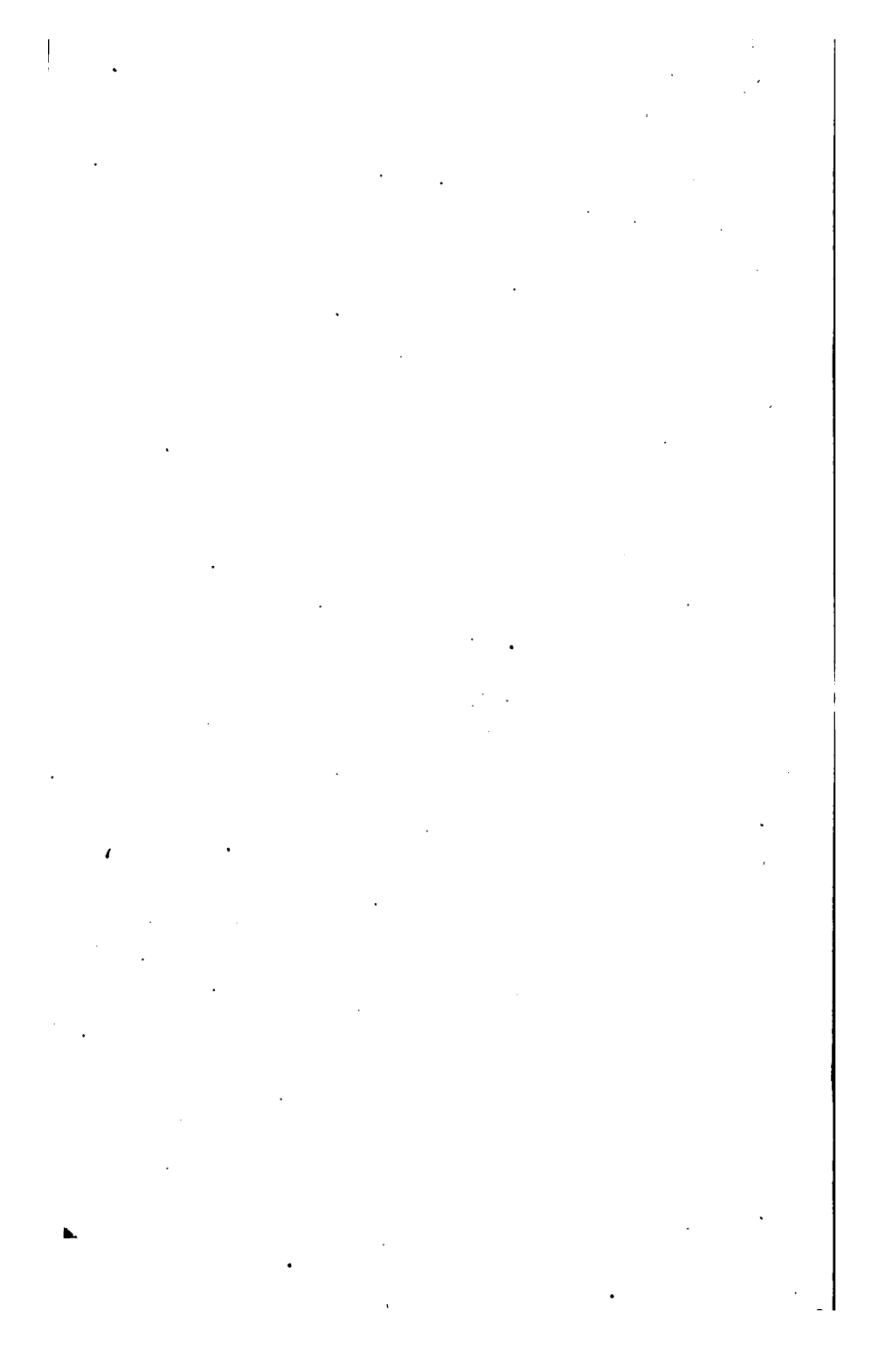
DEPARTMENTS OF LAW, SCIENCE, AND
LITERATURE.

2542—43 (1882-83).



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2543 (1883.)



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HISTORICAL SUMMARY.

In April of the tenth year of Meiji, Tokio Kaisei Gakko was united to Tokio Igakko (Medical College) to form Tokio Daigaku (University of Tokio) which was divided into the four Departments of Law, Science, Medicine, and Literature.

The Departments of Law, Science, and Literature were established in the former Kaisei Gakko, and the Department of Medicine in the former Igakko. Tokio Eigo Gakko (Tokio English Language School) was made Tokio Daigaku Yobimon (Preparatory School to the University of Tokio) and put under the control of the Departments of Law, Science, and Literature. Mr. Hiroyuki Kato, Sori of the former Kaisei Gakko, was appointed Sori (President) of the Departments of Law, Science, and Literature, in Tokio Daigaku; Mr. Arata Hamao, Vice Director of the former Kaisei-Gakko, was appointed Sori-Ho (Vice-President) of the same Departments of Law, Science, and Literature, and in addition to his duties as Vice-President was made Shukan (Principal) of Tokio Daigaku Yobimon, Mr. Ichizo Hattori, Director of the former Eigo Gakko, was appointed Shukan, of Tokio Daigaku Yobimon, and immediately after, the office of Sori-Ho of the Departments of Law, Science, and Literature, was assigned to him in addition to his duties as Shukan. All instructors in the former Kaisei Gakko and Eigo Gakko became respectively professors in the Departments of Law, Science, and Literature, and teachers in the Yobimon.

On the 14th of April, Mombusho put Koishikawa Shokubutsu-en (Koishikawa Botanical Garden), which formerly belonged to the Educational Museum, under the control of Tokio Daigaku.

In June of the same year, a University Magazine, called Gakugei-Shirin, was first published, and it was determined that thereafter it should be continued monthly, collecting various opinions of learned men, either native or foreign.

From September of the same year, the modified and newly added courses of instruction were practically pursued.

In October, Toshokan (the University Library) was newly built.

On the 19th of December, certificates were given, with appropriate ceremony, to the three students who had completed the course of Chemistry at the annual examination of the last academic year, and this was the first occasion of giving certificates to the students of the University.

In this year, Mr. Edward. S. Morse, Ph. D. of America, Professor of Zoölogy and Physiology in the Department of Science, discovered a shell-heap in Oimura, Yebaragori, in the province of Musashi. By digging out the shell-heap, he found there a great many fragments of ancient pottery, and human bones, as well as those of beasts. After this, discoveries of ancient pottery, &c., of a similar nature, were made in several places, namely, Koishikawa Botanical Garden ; Otsukamura, Yashirogori, Higo ; Okudaira, Shidagori ; Hitachi ; Hakodate, Ojima ; Otaru, Shiribeshi, &c. They are all of great value to the science of Archæology as well as to that of Paleontology.

In May of the 11th year of Meiji, Mombusho modified the regulations, by which the duties of Sori are defined

and enumerated, and thereby considerably extended the authority of the Sori.

On the 8th of July, certificates were given to the sixteen students, who had completed their respective courses, six being in Law, seven in Chemistry, and three in Civil Engineering. Thus the number of students, who had finished their special courses, exceeded by thirteen the number of those who received certificates in the previous year.

In September, Kanshotai (Observatory) was newly built at Motofuji-cho, Hongo.

In December, the power of granting degrees was vested in Tokio Daigaku by Mombusho. In early times the system of granting degrees to students existed, but had been abandoned for a long period. This re-establishment of the system of granting degrees is to be regarded as a remarkable event in the history of Japanese Education. Five distinct degrees were then established, namely, Hogakushi, Rigakushi, Igakushi, Bungakushi, and Seiyakushi.

On the 24th of the same month, certificates were given, with appropriate ceremony, to the five students who had completed the course of Physics in French.

In February of the 12th year of Meiji, it was decided to erect new buildings for the accommodation of the Departments of Law and Literature, on the ground of Mombusho, situated in Motofujicho, Hongo.

On the 4th of April, Mr. Ichizo Hattori, Vice-President, was appointed President of the Osaka Special College.

In May, the three students who had completed their respective courses, viz., Law, Chemistry, and Civil Engineering were sent to England, and one who had completed that of Physics, to France, by Mombusho to continue their studies.

The 10th of July was the first occasion of conferring degrees. Fifty-five students who had finished their respective courses received them, and the ceremony was more elaborate than had been customary in giving certificates.

The degree of Hōgakushi was conferred upon fifteen, and that of Rigakushi upon forty. On this occasion, Gen. Grant, Ex-President of the United States of America, who was then visiting this country, was present by invitation.

In September, the regulations of the terms and examinations were modified, and the rule for elective studies was added with the object of providing studies for those whose time does not allow them to follow a regular course.

On the 31st of March of the 13th year of Meiji, the name of Hakubutsujo (Museum) was given to the place for the collections of Mineralogical, Geological, and Biological specimens. This building stands on the ground of the Tokio Foreign Language School. The models and specimens pertaining to other branches of study, previously distributed among the lecture rooms and laboratories, were transferred to this Museum. Since July of the following year, it has been open every Sunday to the public.

On the 13th of April of the same year Mr. Arata Hamao, Vice-President, was appointed First Junior Secretary of Mombasho. On the 22nd of the same month, Mr. Hiroyuki Kato was promoted to the position of officer of the third rank in Mombusho, retaining the office of President, and on the 23rd, Mr. Ichizo Hattori, President of the Osaka Special College, was appointed Vice-President of the University, as well as Principal of the Preparatory School.

On the 3rd of June, Mr. Ichizo Hattori was appointed First Junior Secretary of Mombusho, retaining the former

office of Vice-President of the University, as well as that of Principal of the Yobimon.

On the 10th of July, degrees were granted with appropriate ceremony to thirty-eight students who had completed their respective courses. Hogakushi numbered six, Rigakushi twenty-four, and Bungakushi eight. Among the Rigakushi were eight students who had completed the course of Physics in the French language. This course was established for the students of the polytechnic course in French, when the latter was abolished in August of the 8th year of Meiji. The French course in Physics was also abolished on the graduation of the eight remaining students above mentioned.

In September, the single course of Geology and Mining was divided into two separate courses, viz., that of Geology and that of Mining and Metallurgy. This change was thought expedient because the subjects pursued in these two courses are identical in only a few cases, and in these few the instruction varies according to the necessity of each course.

In the same month, according to the suggestion of Professor Mendenhall, in order to measure the velocity of sound under different conditions, an application was made to the government for permission to use at specified times the noonday cannon in the castle grounds. This permission was granted on the 25th of December. These experiments were conducted in the following year.

In October, two students who had received the degree of Rigakushi were sent by Mombusho, one to Germany to pursue Geology, and the other to France to pursue Physics, and one, who had received the degree of Bungakushi, to England to pursue Political Economy.

On the 15th of June of the 14th year of Meiji, a change was made in the Organization of Tokio Daigaku whereby the four Departments of Law, Science, Medicine, and Literature, and also Tokio Daigaku Yobimon (Preparatory School) were all put under the control of the Sori. Each Department has its Cho (Dean), and in Tokio Daigaku there are Kioju (Professors), Jo-Kioju (Assistant Professors), and Shoki (Secretaries). In the Preparatory School there are Cho (Director), Kioyu (Teachers), Jo-Kioyu (Assistant Teachers) and Shoki.

On the 6th of July, Mr. Hiroyuki Kato was appointed Sori (Rector) of Tokio Daigaku, and on the 7th, Mr. Kensai Ikeda was appointed Sori-Kokoroye.

On the 9th of the same month, degrees were conferred upon sixty-eight students who had completed the respective courses in the Departments of Law, Science, Medicine, and Literature. Hogakushi numbered eight, Rigakushi seventeen, Igakushi twenty-eight, Seiyakushi nine, and Bungakushi six. On this occasion the Imperial Princes, Ministers of the several Departments of the Government, and many other officials and gentlemen were present.

On the 11th of the same month, Mr. Tadanori Ishiguro was appointed to act as assistant to the Sori. On the 14th, Mr. Ichizo Hattori was appointed Cho of the Department of Law, and also of the Yobimon (Preparatory School); Messrs Dairoku Kikuchi, Hiizu Miyake and Masakazu Toyama were appointed Kioju of Tokio Daigaku, and also respectively Cho of the Departments of Science, Medicine, and Literature. Above forty Kioju and Jo-Kioju were appointed at this time, besides many Kioyu and Jo-Kioyu. On the 23rd of the same month, Mr. Ichizo Hattori

was appointed to act as assistant to the Sori, retaining his former offices.

In September, the regulation concerning the study of French and German was modified. Students in the Departments of Science and Literature are accordingly required to study German instead of choosing between French and German. This change has been made in order to enable students to pursue their studies or professions in future to the best advantage, since it is believed that Germany is the country where the Sciences here pursued have reached the highest comparative development. The students in these Departments, however, together with the Law students, may study French if they have sufficient time to do so. The course of Mathematics, Physics, and Astronomy, in the Department of Science, has been divided into three distinct courses and the course of Philosophy, Political Philosophy, and Political Economy, in the Department of Literature has been divided, with some modifications, into two courses, viz., that of Philosophy, and that of Political Science and Economy.

On the 2nd of January of the 15th year of Meiji, the office of Kanji of Tokio Daigaku (for the management of University Affairs under the Sori) was created, with rank next to that of the Sori.

On the 4th of February, two students who had received the degree of Rigakushi were sent by Mombusho, one to Germany to pursue Zoölogy and the other to England to pursue Mechanical Engineering; those who had received the degree of Igakushi, were sent to Germany to pursue respectively Psychiatry, Pathology and Pathological Anatomy, Materia Medica and Medical Jurisprudence; and

one who had received the degree of Bungakushi, to Germany to pursue Political Science.

On the 13th of the same month, Kanshotai was divided into Tenshotai (Astronomical Observatory), and Kishotai (Meteorological Observatory). On the 15th, Mr. Ichizo Hattori was appointed Kanji of Tokio Daigaku; Mr. Nobushige Hozumi was appointed Kioju of Tokio Daigaku and also Cho of the Department of Law; and Mr. Shigetake Sugiura was appointed Cho of the Preparatory School.

On the 28th of April, Mr. Nobushige Hozumi was appointed First Junior Secretary of Mombusho, retaining also his former offices.

On the 30th of July, Kōten Kōshiū Kua (a course in Japanese classics including ancient laws and history) was established.

In this country there were, and still are, so called Kokugakusha (those who have specially devoted themselves to the above studies) and they have hitherto been separated into several schools, each pursuing its special branch such as Shintooism, Poetry, etc. Most of the Kokugakusha, being far behind the present times in their progress, afford no assistance to the direct needs of society, and so they are looked upon as almost useless.

Such a state of things, if continued, would have a tendency to cause these studies themselves to be neglected.

Ancient laws, history, poetry and other literary works, however, are of great value to the historian as well as to the student of Sociology, Political Science, Rhetoric, etc., who could not study their respective subjects without reference to the above branches of learning.

Nevertheless, if this present state were to remain for any length of time without improvement, a lack of men

who have sufficient knowledge in those studies would be the inevitable consequence, which must be avoided for the sake of the country at large. For this reason the plan of establishing a new special course in those studies was submitted to Mombusho in December of the 12th year of Meiji by the Sori so as to preserve those studies and improve their system. The present establishment of this new course was made according to that plan which was then approved by that Department. Accordingly, in July regulations for this course were made, and in September thirty-six students who had passed the entrance examinations were admitted to this course.

In May, scholarships for Post Graduate Study were established.

In June the preparatory course in the Department of Medicine was put under the Yobimon in connection with the former Yobimon course, the Yobimon was then divided into two ; the former Yobimon being called Yobimon-Hon-Kō, and that which is under the Department of Medicine being called Yobimon-Bun-Ko.

On the 16th of the same month Mr. Hiide Miyake was appointed to take charge of the Yobimon Affairs in addition to his former offices.

On the 8th of August Mr. Shigetake Sugiura was appointed Kioyu (teacher) of the Yobimon in addition to his former office.

In September it was determined to appoint superintendents over the librarians, museum-keepers, and officers in charge of apparatus and chemicals, in place of Torishimari, which office was then abolished.

On the 28th of October, degrees were granted to sixty-six students who had completed their respective courses

in the last Academic Year. Hogakushi numbered eight, Rigakushi twenty, Igakushi twenty nine, Seiyakushi five, and Bungakushi four. On this occasion the Ministers of the several Departments of the Government and other officials and gentlemen including foreigners were present. The Korean Ambassadors who were then visiting this country were also present. This ceremony which is usually held on the 10th of July was this year postponed o the above mentioned date, on account of the prevalence of cholera during the summer.

I. CALENDAR.

2542-43 (1882-83).

2542.—September	11.	First Term begins.
“	23.	Holiday; Shiuki Korei Sai.
October	17.	“ Kanname Matsuri.
November	8.	“ Tencho Setsu.
“	23.	“ Niiname Matsuri.
December	24.	First Term ends.
“	25.	Winter Vacation begins.
2543.—January	7.	“ “ ends.
“	8.	Second Term begins.
“	30.	Holiday; Komei Tenno Sai.
February	11.	“ Kigen Setsu.
March	21.	“ Shunki Korei Sai.
“	31.	Second Term ends.
April	1.	Spring Vacation begins.
“	7.	“ “ ends.
“	8.	Third Term begins.
June	17.	Term Work terminates.
“	21.	Annual Examinations begin.
July	10.	Third Term ends.
“	11.	Summer Vacation begins.
September	10.	“ “ ends.

II. ORGANIZATION.*

1.—The Departments of Law, Science, and Literature, with the Department of Medicine, form Tokio Daigaku (University of Tokio), and provide special courses of instruction in Law, in the Department of Law; in Mathematics, Physics, Chemistry, Biology, Astronomy, Engineering, Geology, and Mining and Metallurgy, in the Department of Science; and in Philosophy, Political Science and Political Economy, and Japanese and Chinese Literature, in the Department of Literature.

2.—Besides the above courses, in Tokio Daigaku there is Kōten Kōshū Kwa (course in Japanese Classics including Old Japanese Laws, History, Literature, etc.,) belonging to the Department of Literature, the object of which course is to instruct the students in the historical facts of the country, in the history of old laws, in the development of the Japanese language, etc.

3.—Tokio Daigaku Yōbimon Honko which belongs to Tokio Daigaku and is under the control of the Departments of Law, Science, and Literature, is designed to provide a general course of education and to serve as a Preparatory School to the Departments.

III. COURSES OF INSTRUCTION.

1.—All the courses in the Departments of Law, Science, and Literature extend through four years, and there are four corresponding grades of students.

* Detailed information of the Department of Medicine and of the Yōbimon are given in their own Calendar.

2.—In the Department of Law, the students all pursue the same course. In the Department of Science, eight courses have been established and in the Department of Literature, three courses, with Koten Koshu Kua. The students in the Departments of Literature and Science pursue one course respectively which they may elect.

3.—The intention is ultimately to use the Japanese language in all the Departments, but, for the present, instruction is given in the English language. The students, are also taught the French language in the Department of Law, and the German language in the Departments of Science and Literature, except the students of Japanese and Chinese Literature.

4.—The courses in the Departments, with the subjects comprised in each, are as follow :

DEPARTMENT OF LAW.

The object of this Department is to teach the law of this country and also the important parts of English and French Law,

FIRST YEAR.

	HRS PER WEEK.
Encyclopædia of Laws	1 year 8
Roman Law	2 terms 2
Logic	$\frac{1}{2}$ year 2
History	1 " 3
Japanese Literature... ..	1 " 2
Chinese Literature with Essays... ..	1 " 4
English Literature with Essays	1 " 4
French	1 " 3

SECOND YEAR.

	HRS PER WEEK.
Old Japanese Law	1 year 2
Present Japanese Law—Criminal Law	1 “ 3
English Law—Property; Contracts; Torts; Commercial Law	1 year 7
French	1 “ 3

THIRD YEAR.

Old Japanese Law	1 year 1
Present Japanese Law—Criminal Pro- cedure; Civil Procedure; Moot Court Exercises	1 year 4
Public Law	1 “ 4
English Law — Commercial Law; Equity; Maritime Law	1 year 7
French Law—Civil Law	1 “ 3

FOURTH YEAR.

Old Japanese Law—Taihorei	1 year 1
Present Japanese Law—Criminal Pro- cedure; Civil Procedure; Moot Court Exercises	1 year 4
English Law — Civil Proceedings; Evidence; Moot Court Exer- cises	1 year 3
International Law—Public & Private	1 “ 3
Jurisprudence	1 “ 3
French Law—Criminal Law	1 year 3
Graduating Thesis—in Japanese, Chinese, or English.	

DEPARTMENT OF SCIENCE.

The eight courses established in this Department are as follow :

- 1.—Mathematics.
- 2.—Physics.
- 3.—Chemistry.
- 4.—Biology.
- 5.—Astronomy.
- 6.—Engineering.
- 7.—Geology.
- 8.—Mining and Metallurgy.

These courses are identical during the first year, but for the last three years each student is required to elect one of the courses and pursue it as his special study.

FIRST YEAR—ALL THE COURSES.

	HRS PER WEEK.
Mathematics—Analytical Geometry...1 year	4
Physics ½ "	2
Elementary Mechanics 2 terms	2
Astronomy—Outlines 1 "	3
Chemistry—Inorganic; with Laboratory Practice... .. 1 year	4
Elementary Mineralogy ½ "	2
Elementary Geology ½ "	2
Drawing—Geometrical 1 "	2
Logic ½ "	2
English 1 "	4

1. MATHEMATICS.

SECOND YEAR.

		HRS PER WEEK.
Pure Mathematics	... 1 year	9
Applied Mathematics—Mechanics...	1 "	4
Astronomy—Theory and Practice	... 1 "	8
Physics	... 1 "	6
English	... 1 "	2
German	... 1 "	2

THIRD YEAR.

Pure Mathematics	... 1 year	5
Applied Mathematics	... 1 "	4
Astronomy—Theory	... 1 "	3
Physics	... 1 "	6
German	... 1 "	3

FOURTH YEAR.

Pure Mathematics	... 1 year	5
Applied Mathematics	... 1 "	5
Astronomy—Theory	... 1 "	2
Graduating Thesis—in Japanese, Chinese, or English.		

2. PHYSICS.

SECOND YEAR.

Pure Mathematics	... 1 year	5
Mechanics	... 1 "	4
Physics	... 1 "	6
Analytical Chemistry	... 1 "	3
English	... 1 "	2
German	... 1 "	2

THIRD YEAR.

	HRS PER WEEK.
Pure Mathematics 1 year	3
Applied Mathematics 1 "	4
Physics 1 "	6
Analytical Chemistry 1 "	4
German 1 "	2

FOURTH YEAR.

Applied Mathematics 1 year	5
Physics 1 "	8
Astronomy—Practice 1 "	3
Graduating Thesis—in Japanese, Chinese, or English.	

3. CHEMISTRY.

SECOND YEAR.

Analytical Chemistry — Qualitative	
Analysis 1 year	12
Organic Chemistry 1 "	2
Physics 1 "	4
Mineralogy 1 "	2
Blowpipe Analysis 1 "	3
English 1 "	2
German 1 "	2

THIRD YEAR.

Analytical Chemistry — Quantitative	
Analysis 1 year	12
Chemical Technology 1 "	9

	HRS PER WEEK.
Chemical Philosophy	1 year 1
Metallurgy	1 " 4
Physics	1 " 8
German	1 " 2

FOURTH YEAR.

Analytical Chemistry — Quantitative

Analysis; Assaying	1 year 21
Chemical Technology	1 " 9
Graduating Thesis—in Japanese, Chinese, or English.	

4. BIOLOGY.

In the fourth, or last year of this course, the student is required to pursue one subject, either Zoölogy or Botany, as his special study according to his own choice.

SECOND YEAR.

Zoölogy... ..	1 year 8
Botany	1 " 8
Physiological Chemistry	1 " 2
English	1 " 2
Latin	1 " 2

THIRD YEAR.

Zoölogy	1 year 10
Botany	1 " 10
Paleontology	1 " 2
Physiology	1 " 8
German	1 " 2

FOURTH YEAR.

HRS PER WEEK.

Zoölogy	1 year	86
Botany	1 "	20
Graduating Thesis—in Japanese, Chinese, or English.		

5. ASTRONOMY.

SECOND YEAR.

Theoretical Astronomy	1 year	3
Practical Astronomy	1 "	3
Pure Mathematics	1 "	9
Physics	1 "	6
Mechanics	1 "	4
English	1 "	2
German... ..	1 "	2

THIRD YEAR.

Theoretical Astronomy	1 year	3
Practical Astronomy	1 "	3
Pure Mathematics	1 "	3
Applied Mathematics	1 "	4
Physics... ..	1 "	6
German	1 "	2

FOURTH YEAR.

Theoretical Astronomy	1 "	3
Practical Astronomy	1 "	3
Pure Mathematics	1 "	5
Applied Mathematics	1 "	5
Graduating Thesis—in Japanese, Chinese, or English.		

6. ENGINEERING.

In the fourth, or last, year of this course, the student is required to pursue one subject, either Mechanical Engineering or Civil Engineering, as his special study according to his own choice.

SECOND YEAR.

	HRS PER WEEK.
Mathematics... ..1 year	5
Mechanics... ..1 "	4
Resistance of Materials1 term	2
Land Surveying—Lectures; Field and Office Practice1 year	4
Physics1 "	4
Metallurgy1 "	1
Mechanical Drawing1 "	4
English1 "	2
German... ..1 "	2

THIRD YEAR.

Thermodynamics and the Steam Engine	1 year	2
Theory of Structures1 "		2
Mechanism1 "		2
Road and Railway Surveying and Construction1 year		6
Physics1 "		8
Mechanical Drawing1 "		4
German... ..1 "		2

FOURTH YEAR

Mechanical Engineering—Machine Design with Practice in making Working Drawings; Experimental Work; Workshop Practice.
Graduating Thesis—in Japanese, Chinese, or English.

HRS PER WEEK.

Civil Engineering — Bridge Construction ;	
Geodesy—Lectures ; Field and Office	
Practice ; Marine Surveying ; Hydran-	
lic Engineering... ..	1 year 12
Architecture	1 “ 2
Graduating Thesis—in Japanese, Chinese, or	
English.	

7. GEOLOGY.

SECOND YEAR.

Historical Geology	1 year 2
Mineralogy	1 “ 2
Determinative Mineralogy	1 “ 1
Qualitative Analysis	1 “ 5
Qualitative Blowpipe Analysis	1 “ 2
Mining	1 “ 3
Land Surveying and Topographical	
Drawing	1 “ 4
Zoölogy	1 “ 2
Botany	1 “ 2
Geological Excursion	
English	1 “ 2
German	1 “ 2

THIRD YEAR.

Paleontology	1 year 2
Practice in determining Rocks	1 “ 1
Practice in determining Fossils	1 “ 2
Geological Surveying and Dynamical	
Geology	1 “ 2

	HRS PER WEEK.
Lithology \ 1	1
Quantitative Analysis 1	10
Geological Excursion	
German... .. 1	2

FOURTH YEAR.

Practice in determining Rocks ... 1 year	2
Practice in determining Fossils ... 1	8
Microscopy of Rocks and Minerals—	
Lectures and Practice 1	3
Geological Surveying and Surface	
Geology 1	3
Ore Deposits... .. 1	1
Geological Excursion	
Graduating Thesis—in Japanese, Chinese, or English.	

8. MINING AND METALLURGY.

SECOND YEAR.

Mining 1 year	3
Mineralogy 1	2
Lithology 1	1
Land Surveying 1	4
Applied Mechanics 1	3
Determinative Mineralogy 1	1
Qualitative Analysis 1	8
Mechanical Drawing 1	2
English 1	2
German... .. 1	2

THIRD YEAR.

	HRS PER WEEK.
Metallurgy... ..	1 year 4
Qualitative Blowpipe Analysis ...	{ 2 terms 8
	{ 1 term 4
Dressing of Ores	1 year 2
Quantitative Analysis	1 " 10
Mechanical Drawing	1 " 2
Historical Geology	1 " 2
Practical Work at Mines	
German... ..	1 " 2

FOURTH YEAR.

Assaying	1 year 5
Underground Surveying	1 term 1
Quantitative Blowpipe Analysis ...	1 year 3
Practice in Designing	1 " 4
Dressing and Metallurgical Experi- ments	1 " 4
Practice in Underground Surveying	
Visiting Mines.	
Graduating Thesis—in Japanese, Chinese, or English.	

DEPARTMENT OF LITERATURE.

The three courses established in this Department are as follow :

- 1.—Philosophy.
- 2.—Political Science and Political Economy.
- 3.—Japanese and Chinese Literature.

The first two courses are identical during the first year but for the last three years each student is required to elect one of the courses, and to pursue it as his special study.

The last course is not identical with the above two courses even in the first year, and therefore the student at the beginning is required to decide whether he will pursue this course.

FIRST YEAR—ALL THE COURSES.

	HRS PER WEEK.
Japanese Literature	1 year 2
Chinese Literature with Essays... ..	1 " 4
History	1 " 8
English Literature with Essays... ..	1 " 4
Logic... ..	1 " 2
Encyclopedia of Laws... ..	1 " 8
* German	1 " 8

1. PHILOSOPHY.

SECOND YEAR.

Oriental Philosophy—History of Philosophy	1 year 1
European Philosophy—History of Philosophy; Sociology; Psychology	1 " 6
History—Philosophy of History ...	1 " 8
Japanese Literature	1 " 2
Chinese Literature with Essays ...	1 " 4

* First two Courses only.

HRS PER WEEK.

English Literature — History of the Literature; Essays and Criticisms	1 year	4
German	1 “	8

THIRD YEAR.

Oriental Philosophy — Hindoo and Chinese Philosophy	1 year	4
European Philosophy — Modern Phi- losophy	1 “	8
Physiology	1 “	8
Japanese Literature	1 “	2
Chinese Literature with Essays... ..	1 “	4
Essays—in English... ..	1 “	2
German... ..	1 “	3

FOURTH YEAR.

Oriental Philosophy — Hindoo and Chinese Philosophy	1 year	4
European Philosophy — Psychology ; Moral Philosophy ; Aesthetic Phi- losophy	1 “	4
Essays—in Chinese... ..	1 year twice a month.	
Graduating Thesis—in Japanese, Chinese, or English.		

2. POLITICAL SCIENCE AND POLITICAL ECONOMY.

SECOND YEAR.

Statistics	1 year	2
Political Economy	1 “	4

		HRS PER WEEK.
History—Philosophy of History ...	1 year	3
Japanese Literature	1 “	2
Chinese Literature with Essays ...	1 “	4
Essays—English	1 “	2
German	1 “	3

THIRD YEAR.

Ancient and Modern Japanese Law ...	1 year	1
Public Law	1 “	4
Political Economy	1 “	3
Japanese Finance	1 “	1
Public International Law	2 terms	3
Japanese Literature... ..	1 year	2
Chinese Literature with Essays... ..	1 “	4
German	1 “	3

FOURTH YEAR.

Ancient and Modern Japanese Law ...	1 year	1
Administrative Science	1 “	3
Political Economy	1 “	3
Japanese Finance	1 “	1
Jurisprudence	1 “	3
Essays—in Chinese ...	1 year twice a month.	
Graduating Thesis—in Japanese, Chinese, or English.		

3. JAPANESE AND CHINESE LITERATURE

SECOND YEAR.

Japanese Literature with Essays ...	1 year	5
Chinese Literature with Essays... ..	1 “	7

	HRS PER WEEK.
History—Philosophy of History ... 1 year	3
Oriental Philosophy—History of Philosophy1 “	1
European Philosophy—History of Philosophy; Sociology; Psychology 1 “	6

THIRD YEAR.

Japanese Literature with Essays ... 1 year	5
Chinese Literature with Essays1 “	8
Oriental Philosophy — Hindoo and Chinese Philosophy 1 “	4
European Philosophy—Modern Philosophy1 “	3

FOURTH YEAR.

Japanese Literature with Essays ... 1 year	5
Chinese Literature with Essays... ..1 “	8
Oriental Philosophy — Hindoo and Chinese Philosophy 1 “	4
European Philosophy—Moral Philosophy; Aesthetic Philosophy... ..1 “	3
Graduating Thesis — both in Japanese, and Chinese.	

KOTEN KŌSHIU KUA.

(*Special course in Japanese Classics under the control of the Department of Literature.*)

FIRST TERM.

Seishi (History compiled under the instruction of the Emperor) ...1 term	3
Zasshi (Miscellaneous Works on History) 1 “	6

	HRS PER WEEK.	
Law... ..	1 term	1
Kojitsu (Old Forms of Ceremony &c.)	1 "	1
Literature... ..	1 "	7
Chinese History	1 "	6
Chinese Literature	1 "	6
Composition and Poetry.		

SECOND TERM.

Seishi... ..	1 term	6
Zasshi	1 "	4
Law	1 "	2
Kojitsu... ..	1 "	1
Literature... ..	1 "	6
Chinese Law... ..	1 "	5
Chinese Literature	1 "	6
Composition and Poetry.		

THIRD TERM.*

Seishi.
Zasshi.
Law.
Literature.
Chinese Law.
Composition and Poetry

FOURTH TERM

Seishi.
Zasshi.
Law.
Literature.
Chinese Law.
Composition and Poetry.

* The hours for the third and following terms are not yet fixed.

FIFTH TERM.

Seishi.

Zasshi.

Law.

Literature.

Chinese Law.

Essays on the investigation of facts concerning the foregoing subjects.

Composition and Poetry.

SIXTH TERM.

Seishi.

Zasshi.

Law.

Literature.

Chinese Law.

Essays on the investigation of facts concerning the foregoing subjects.

Composition and Poetry.

Graduating Thesis.

IV.—DETAILED STATEMENTS OF THE COURSES OF INSTRUCTION.

ENCYCLOPEDIA OF LAWS.

In this subject the general outlines of all the branches of Law, such as the principles of Jurisprudence, Constitutional Law, Administrative Law, Civil Law, Criminal Law, Civil Procedure, Criminal Procedure and International Law are given to the student by way of preparation for the subsequent studies in Law.

Books of reference. Blackstone's Commentaries, Broom

and Hadley's Commentaries; Terry's First Principles of Law; Holtzendorf's Encyclopedie der Rechtswissenschaft; Falck's Encyclopedie der Rechtswissenschaft.

ANCIENT JAPANESE LAW.

During the first year, brief lectures upon Ancient and Modern Japanese Law are given to the students in the Departments of Law and Literature, and Seidotsu is used as a text-book. Students of Law take up Hososhiyosho, Joyeishikimoku and Hiakkajo in their second year; Hososhiyosho, in their third year, and Taihorei in their fourth year.

For extra reading, the following books are selected, those selected for the first year being omitted.

2nd year :—Ruiju-Sandai-Kiaku; Seiji-Yōriaku; Shoku-Nihongi.

3rd year :—Risso-zampen; Riō-no-Shiuge; Shoku-gēnshō.

4th year :—Kembu-Shikimoku; Kingioku-Shōchiushō; Saiban-Shiyōshō; Yengishiki.

PRESENT JAPANESE LAW.

Lectures on Criminal Law are given in the second year of the Law Course and on Criminal Procedure during the third and fourth years.

The instructor conducts Moot Courts with the third and fourth year classes in Law. In each case students are appointed counsel in turn; a written statement of the facts of the case is given to them, and they are required to draw the proper pleadings as in an actual suit, the question submitted being generally one involved in the cases actually decided by one of the courts.

ENGLISH LAW.

Instruction is given either by means of lectures or by reference to text-books, whenever books suitable for the

use of Japanese students can be had. In the latter case portions to be studied in advance are assigned, and the Instructor explains, comments, and questions the students upon, the portion so assigned.

The following are the text-books now in use :—

Contracts. Smith on Contracts; Pollock on Contracts; Langdell's Select Cases on Contracts; Langdell's Summary of the Law of Contracts.

Real Property. Blackstone's Commentaries; Williams on Real Property.

Crimes. Bishop's Commentaries on the Criminal Law; Harris' Principles of Criminal Law; Stephen's Digest of Criminal Law.

Torts. Broom's Commentaries; Underhill's Torts.

Sales. Langdell's Select Cases on Sales; Benjamin's Sales; Kent's Sales; Smith's Mercantile Law; Story's Agency; Story's Bailment; Kent's Bailment; Lindley's Partnership; Pollock's Partnership; Story's Bills and Notes.

Equity. Hayne's Outlines of Equity; Snell's Principles of Equity.

Evidence. Stephen's Digest of the Law of Evidence; Powell's Evidence; Best on Evidence.

FRENCH LAW.

For instruction in French Law, students are taught Civil Law during the third year, and Criminal Law during the fourth year, the French Codes and Commentaries being used as a text-book.

ROMAN LAW.

During the last two terms of the first year, instruction in the elements of Roman Law is given by way of pre-

paration for the subsequent studies in English and French Law.

Sander's Institutes of Justinian is used as a text-book.

INTERNATIONAL LAW.

International Law is divided into Public and Private; the first two terms are devoted to the study of Public International Law, and its general principles;—the nature of the state, primitive rights, conventional rights, war, neutrality, and re-establishment of peace are discussed under this head; and during the last term the general principles of Private International Law, and differences of private law among different states concerning persons, things, contracts, evidence, etc., are studied.

Text-books and books of reference.

Wheaton. International Law.

Wharton. Conflict of Laws.

Bluntschli. Droit International Codifié.

De Martens. Précis du Droit de Gens Moderne de l'Europe.

Fœlix. Traité du Droit International Privé.

Vattel. Droit des Gens.

JURISPRUDENCE.

Lectures on Jurisprudence are given to instruct the students in the principles of Law; and the subject is treated under four heads, viz., Analytical Jurisprudence, Historical Jurisprudence, Comparative Jurisprudence, and Speculative Jurisprudence.

Books of reference.

Austin. Jurisprudence.

Maine. Ancient Law.

Bentham. Theory of Legislation.

Ahren. Naturrecht.

Ihering. Geist des Roemischen Rechts.

Montesquieu. De l'Esprit des Lois.

Holland. Jurisprudence.

PURE AND APPLIED MATHEMATICS.

1st year :—In Pure Mathematics, the subjects taught are the elements of Plane and Solid Analytical Geometry : Text-books being Puckle's Conic Sections and Aldis' Solid Geometry.

In Applied Mathematics, elementary Mechanics is taught during two terms. Text-book, Todhunter's elementary Mechanics.

2nd year :—In Pure Mathematics the subjects are Higher Plane and Spherical Trigonometry (for students in Mathematics only), Solid Geometry (for students in Mathematics and Physics), Elements of Differential and Integral Calculus and Differential Equations (for students in Mathematics, Physics, and Engineering). Text and reference books, Chauvenet's Trigonometry ; Frost's Solid Geometry ; Todhunter's Differential Calculus ; Todhunter's Integral Calculus ; Boole's Differential Equations ; Williamson's Differential Calculus and Integral Calculus ; Price's Infinitesimal Calculus.

In the Applied, Mechanics is taught chiefly by lectures.

3rd year :—In Pure, higher Analytical Geometry, higher Calculus and Differential Equations, and higher Algebra are taught. Text and reference books, Todhunter's Theory of Equations, Salmon's Higher Algebra ; Salmon's Conic Sections ; Ferrar's Trilinear Coordinates ; Frost's Solid Geometry ; Todhunter's Integral Calculus, etc.

In the Applied, Geometrical Optics is taught during one term, generally the first ; also Thermodynamics. During

the second and third terms, Statics, Theory of Attractions, Undulatory Theory of Sound and Light are gone through; and Kinetics is begun. Text and reference books: Todhunter's Statics; Airy's Tracts; Lloyd on Light; Tait and Steele's Dynamics of a Particle, Parkinson's Optics, etc.

4th year:—In Pure, Higher Calculus and Higher Differential Equations are the subjects of the lectures; also Modern Geometry and Quaternions; and a short review of Japanese Mathematics. Text and reference books; Boole's Finite Differences; Boole's Differential Equations; Townshend's Modern Geometry; Kelland and Tait's Quaternions; Cayley's Elliptic Functions, etc.

In the Applied, Dynamics and Hydrodynamics (including Sound) are taught. Text and reference books; Tait and Steele's Dynamics of a Particle, Routh's Rigid Dynamics, and Besant's Hydromechanics; Donkin's Acoustics, etc. Also Mathematical Theory of Electricity and Magnetism is lectured upon.

Although text-books are placed in the hands of the students, the method of teaching is not by recitations, but by lectures and exercises. For the exercises, students of all the years assemble about three days a week in the afternoon.

Also a voluntary class meets once a week to read Thomson and Tait's Natural Philosophy.

PHYSICS.

Students from three different courses of the University spend more or less time in the Department of Physics. They are as follows;—Course of Mathematics, Physics, and Astronomy; that of Engineering; and of Chemistry.

2nd Year:—Practice in simpler physical manipulations; the use of instruments of precision in measurements of length, mass, time, etc. The discussion of observations and results and their investigation by the method of least squares. The application of these principles in the experimental investigation of the simpler problems in mechanical physics. In the latter part of the year the subject of Heat is taken up.

3rd year:—The principal work for this year is in Optics including Theoretical and Experimental. Geometrical Optics is studied this year in the Department of Mathematics, and Thermodynamics, in that of Mechanical Engineering.

Students of Mathematics and Astronomy follow the same general course in their work in Physics as the special students of Physics with the exception that less time is spent in Laboratory work.

Students of Engineering and Chemistry receive a limited amount of instruction in Physics during the second and third years of their course.

4th year:—During this year students are principally occupied in the study of Electricity and Magnetism. In addition to the theoretical investigation of these subjects much time is given to laboratory practice in Electric and Magnetic measurements including their application to telegraph testing. In the course of this year each student is expected to undertake and carry out something in the way of an original research which is to be worked out in detail and made the subject of a graduating thesis.

Text-books and books of reference are Stewart's Elements of Physics; Deschandel's Physics; Ganot's Physics; Kohlrausch's Physical Measurements; Pickering's Physical

Manipulations; Everett's Centimetre-gramme-second system; Stewart's Heat; Maxwell's Theory of Heat; Airy's Sound; Airy's Undulatory Theory of Optics; Lloyd's Wave Theory of Light; Parkinson's Optics; Maxwell's Treatise on Electricity and Magnetism; Cumming's Theory of Electricity; Lloyd's Magnetism; Airy's Magnetism.

INORGANIC CHEMISTRY.

During the first year the student in the Department of Science attends lectures on Inorganic Chemistry; he is also instructed in making a series of experiments in order to make himself practically acquainted with the preparation and properties of the most important gases, acids, bases, salts, etc., concerning which he has learned in the lecture-room.

The subjects of this course are treated in the following order :

I. NON-METALLIC ELEMENTS.

Oxygen. Theory of Combustion. Hydrogen. Nitrogen. Composition of the Atmosphere. Carbon, Chlorine, Bromine, Iodine, Fluorine, Sulphur, Selenium, Tellurium. Phosphorus, Boron, Silicon. These non-metallic elements and their chief compounds are studied in relation to their production, properties, and decomposition. The proportions by weight and by volume in which they combine are also fully explained and illustrated in connection with the atomic theory.

II. METALS.

The extraction and properties of the chief metals, and their industrial applications. The study of their most important salts, and their characteristic reactions. Theory

of the constitution of salts. Relation between the chemical and physical properties of elementary and compound bodies. Determination of the atomic weights. Time allowing, the preparation and properties of the rare metals, and their characteristic reactions will also be studied.

Books of reference : Gill's chemistry for Schools ; Roscoe's Lessons in Elementary Chemistry ; Williamson's Chemistry for Students ; Miller's Elements of Chemistry ; Roscoe and Schorlemmer's Elementary Treatise on Chemistry ; Watt's Dictionary of Chemistry.

ANALYTICAL CHEMISTRY.

During the second year the student works at Qualitative Analysis in the chemical laboratory, commencing with the analyses of simple salts and proceeding to more complex mixtures as he becomes more experienced. Subsequently, alloys, mineral waters, as well as industrial products will be given for analysis. Detection of metallic and other poisons in organic mixtures will also form a part of the work. If time permits, after having studied the reactions of the more important organic acids and bases, he is permitted to prepare pure specimens of various organic products.

In the third and fourth years the student in the course of chemistry devotes himself to the quantitative analysis of mineral and organic substances. Commencing with simple salts, he passes on to the analysis of alloys and afterwards to natural minerals and ores of more complex composition. The analysis of industrial products by gravimetric and volumetric methods is also taken up in the third year. During the first half of the fourth year, the

student is mainly occupied with ultimate and proximate organic analysis, while the remaining half is devoted to the experimental investigation of some subject which he has selected for the graduating thesis.

The following is the list of analyses executed by the student.

Names of substances.	Constituents to be determined.
1. Baric chloride.	Ba, Cl, $H_2 O$.
2. Magnesian sulphate.	MgO , $S O_3$, $H_2 O$.
3. Potassium alum.	$K_2 O$, $Al_2 O_3$, SO_3 , $H_2 O$.
4. Hydrodisodic phosphate.	$Na_2 O$, $P_2 O_5$, $H_2 O$.
5. Ammonio ferrous sulphate.	$H_3 N$, $Fe O$, SO_3 .
6. Alloy containing tin, silver, and copper.	Sn, Ag, Cu.
7. Alloy containing tin, lead, and zinc.	Sn, Pb, Zn.
8. Dolomite.	$Si O_2$, $Al_2 O_3$, $Fe_2 O_3$, $Ca O$, $Mg O$, CO_2 .
9. Felspar.	$Si O_2$, $Al_2 O_3$, $Fe O$, $Ca O$, $K_2 O$, $Na_2 O$.
10. Copper ore.	Cu.
11. Coal.	$H_2 O$, volatile matter, fixed carbon, S, ash.
12. Alkalimetry.	Soda ash, pearl ash.
13. Acidimetry.	Vinegar, hydrochloric acid.
14. Chlorimetry.	Bleaching powder.
15. Manganese ore.	$Mn O_2$.
16. Iron Ore.	$Si O_2$, Fe, S, P,
17. Iron Slag.	$Si O_2$, $Fe O$, $Al_2 O_3$, $Mn O$, $Ca O$, $Mg O$, S, $P_2 O_5$.

18. Cast iron.	Fe, Mn, Graphite, Combined C, Si, S, P,
19. Type metal.	Sn, Pb, Sb, Fe.
20. German silver.	Cu, Zn, Ni, Fe.
21. Fahl ore.	Sb, As, Cu, Pb, Zn, Fe, Al_2O_3 , Ca O, Mg O, S, Si O_2 , CO_2 .
22. Raw sugar.	Water, crystallizable cane sugar, glucose, ash.
23. Petroleum.	Fractional distillation, spe- cific gravities, flash test.
24. Saké.	Alcohol, glucose, volatile and non-volatile acids, total solid, ash, specific gravity.
25. Rice.	H_2O , fat, gum, cane sugar, glucose, starch, albumi- noids, cellulose, ash.
26. Milk.	Water, butter, sugar, casein, ash, specific gravity.
27. Water.	Total solids, Cl, organic and volatile matter, free and albuminoid ammonias, hardness.
28. Vapor density.	
29. Chofun.	H_2O , volatile and organic matter, $Ca_3(PO_4)_2$, H_3N , ash.
30. Organic solid compound,	C, H, O.
31. " liquid "	C, H, O.
32. " solid "	N (by Varrentrapp and Will's method.)

The third year students of three other courses, viz., those of Mining, Geology, and Physics, also receive instruction in quantitative analysis; but as the time which they can devote to this subject is limited, those substances which are more appropriate for their respective studies are selected for them from the above list.

The text-books in use are Thorpe's Qualitative Analysis, Fresenius' Qualitative Analysis, Jones' Practical Chemistry, Cairn's Quantitative Analysis, Thorpe's Quantitative Chemical Analysis, Fresenius' Quantitative Analysis, Wanklyn's Water Analysis, Sutton's Volumetric Analysis.

ORGANIC CHEMISTRY.

During the second year, the student of the chemical course is instructed in Organic Chemistry by lectures which are given twice a week.

SYNOPSIS OF LECTURES.

Introduction. Chemical nature of carbon. Constitution of the carbon compounds. Organic analysis. Determination of the vapor density. Determination of the molecular formula. Empirical, rational and constitutional formulae. Isomerism. Physical properties. Classification. Action of reagents on carbon compounds.

1. Group of cyanogen and carbonyl compounds.

Cyanogen. Simple and complex cyanides.

Cyanates and thiocyanates.

Carbon monoxide. Carbon dioxide. Carbamide.

Carbon disulphide. Sulphocarbamide.

2. Group of the Fatty compounds.

Paraffins.

Primary alcohols, aldehydes, and acids.

Secondary alcohols and ketones.

Tertiary alcohols.

Methyl alcohol. Its derivatives.

Formaldehyde. Formic acid.

Ethyl alcohol. Vinous fermentation. Wine. Beer.

Saké. Spirits. Ethyl cyanides. Nitrogen bases.

Ethyl mercaptan. Metallic compounds of ethyl.

Ethane and its substitution compounds.

Acetaldehyde. Acetic acid. Substitution compounds of acetic acid.

Fulminates.

Propyl compounds. Butyl compounds. Amyl compounds. Higher homologues. Solid fatty acids.

Natural wax.

Olefines. Glycols. Monobasic and dibasic acids derived from glycols.

Ethene compounds. Ethidene compounds.

Glycollic acid. Oxalic acid.

Propene compounds. Lactic acid.

Butene compounds. Succinic acid.

Malic acid.

Tartaric acid. Racemic acid and levotartaric acid.

Citric acid.

Uric acid and its derivatives.

Glycerin. Fats. Allyl compounds.

Acetylene and its homologues.

Erythrite. Mannite.

Carbohydrates.

Terpenes and camphors

3. Group of the aromatic compounds.

General characters of the aromatic compounds.

Benzene. Its derivatives. Azo and diazo compounds.

Phenol. Dioxybenzenes. Trioxybenzenes.

Toluene. Benzyl group. Benzoic acid.

Salicylic acid. Phthalic acid.

Aniline colors. Phenol colors.

Indigo group.

Naphthalene group.

Anthracene. Anthraquinone. Alizarine.

4. Group of the glucosides.

5. Group of the alkaloids.

6. Group of unclassified substances.

Coloring and bitter principles.

Albuminoids.

Animal products.

Works for reference. Fownes' Elementary Chemistry.
Schorlemmer's Chemistry of Carbon Compounds. Miller's
Organic Chemistry (5th Edition).

CHEMICAL TECHNOLOGY.

The lectures on this subject are given three times a week, during the third and fourth year of the special course in chemistry. To complete the instruction, practical work is done by the students, also three times a week, during the afternoon hours, in a special laboratory. This, during the last year, has been enlarged thus so as to afford room for a greater number of students. The object of the practical work is to render the students more familiar with the reactions, the practical difficulties, etc., of the various branches of chemical technology, as well as with the methods of technical examination of new materials or products, partly made by the students them-

selves. It is also the intention to form a collection of manufactured articles to be used partly for illustrating the lectures, partly as patterns, or as objects of examination in the technical laboratory. Whenever it is possible, manufacturing places are visited to show the products described in the lectures.

The subjects treated are the following :

Technology of metals ; alloys, ornamentations of metals, etc.

Galvanoplastic and electroplating.

Metallic compounds, mineral pigments, etc.

Potash, Saltpeter.

Gunpowder, and other explosives.

Sodium chloride.

Sulphur.

Sulphuric acid, nitric acid.

Sodium sulphate, Carbonate, etc.

Hydrochloric acid, chlorine, bleaching powder.

Ammonium compounds.

Aluminium compounds.

Ceramics.

Glassmaking.

Gypsum, mortar, cement.

Paper making.

Starch, dextrine.

Sugar.

Industries based on fermentation.

Bread making.

Vinegar.

Oils and varnishes.

Soap making.

Leather.

Glues.

Matches.

Dyeing and Printing.

Materials for illuminating purposes.

Materials for combustion.

ZOÖLOGY.

2nd year Biology :—Studies during this year are intended to give a general idea of the animal Kingdom. In conjunction with lectures on general Zoölogy students will be required to dissect typical animals of different classes, making themselves at the same time familiar with methods of dissection, use of the microscope, etc. During the latter part of the year, lectures on Osteology will be given.

3rd year Biology :—Advanced Morphology will be studied by means of lectures and seminarium. Dissection of typical animals will be continued in the laboratory. In addition, Histology will form one of the leading studies of the year, and the systematic Zoölogy and the elements of Embryology will also be taken up.

4th year Biology :—Advanced Morphology will be continued as in the previous year. Each student will also be required to work during the year on some one subject for original investigation, and to prepare a thesis for graduation.

Provisions are made for students in this course to spend before graduation one or two sessions at the seaside, enabling them to become acquainted with animals in their own habitat under natural conditions and to study such animals as are not readily accessible in an ordinary laboratory.

2nd year Geology:—The work of this class will be general Zoölogy and Osteology. The principal classes of animals will be taken in turn, and their anatomy and histology will be dealt with so far as this is necessary in order to give a correct notion of classification. Osteology will be taken up during the latter part of the year.

Text-Books.

- Claus. Grundzüge der Zoologie.
Gegenbaur. Grundriss der Vergleichenden Anatomie.
Huxley. Anatomy of the Vertebrates.
Huxley. Anatomy of the Invertebrates.
Huxley. The Crayfish.
Balfour. Comparative Embryology.
Foster and Balfour. Elements of Embryology.
Quain. Elements of Anatomy.
Schäfer. Practical Histology.
Foster and Langley. Practical Physiology.
Huxley and Martin. Elementary Biology.
Brooks. Hand-book of Invertebrates Zoology.
Packard. Zoölogy.
Nicholson. Zoölogy.

BOTANY.

2nd year Biology:—Lectures on Structural and Physiological Botany are given twice a week throughout the year. Instructions in the laboratory on the same subject also occupy the whole year. The student, moreover, practises the description and determination of species of Phanerogams. For these purposes specimens are brought daily from the Koishikawa Botanical Garden. Laboratory work in all occupies six hours a week.

2nd year Geology:—In the first term to make the students familiar with the structure of plants and also with the natural system of classification, instruction is given in the 'analysis' of plants in the laboratory. During the whole of the second term and parts of the first and third terms lectures are given on the Morphology and Physiology of plants and also on the Principles of Classification. In the third term instruction is again given in the laboratory on what has been learned by means of lectures in this and the preceding terms. The number of hours occupied thus is two in a week.

3rd year Biology:—Lectures on Systematic and Economical Botany are given twice a week throughout the year, the last part of the second term and the whole of the third term being devoted to lectures on Cryptogams. Laboratory work occupies eight hours a week and consists chiefly in the study of Gramineæ and Cyperaceæ, among Monocotyledons; and Lycopodiaceæ, Rhizocarpeæ, Ophioglossaceæ, Equisetaceæ, Filices, Musci, and Hepaticæ, among Cryptogams. Instruction is also given on Thallophytes, but more special study of this lowest division of the vegetable Kingdom is deferred to the next year.

4th year Biology:—This class includes only those students who take up Botany as their specialty. Lectures are given on Geographical and Paleontological Botany, on Thallophytes and on advanced Physiology of Plants. Laboratory work is on the same subjects. The student is also required to make a special investigation of some single group of plants.

Books of reference:—Sachs's Text-Book of Botany; Thomé's Structural and Physiological Botany; Bessey's

Botany; De Maout and Decaisne's Descriptive and Analytical Botany; Gray's Botanical Text-Book; Balfour's Class Book of Botany; Franchet and Savatier's Enumeratio Plantarum; Miquel's Prolusio Floræ Japonicæ; Sieboldt's Flora Japonica; Thunberg's Flora Japonica; Suringer's Algæ Japonicæ; Bentham and Hooker's Genera Plantarum; Sômoku Zusetsu; Honzō Zufu; and many other general and special works and periodicals kept in the laboratory.

ASTRONOMY.

1st year Science:—Lectures on elementary astronomy are given during the first term.

2nd year:—Theoretical Astronomy—Elementary mathematical, and descriptive. Text-books, Loomis, Newcomb & Holden.

Practical Astronomy—Work with Transit, Zenith-telescope and Sextant; determination of time and latitude, values of level-divisions and micrometer-screws. Text-books, Loomis and Chauvenet.

3rd year:—Theoretical Astronomy—Rigorous methods of reducing observations; Celestial Mechanics. Text-books, Chauvenet, Pentécoult and Laplace.

Practical Astronomy—Observation and reduction of Equatorial work; practice with Spectroscopes and Photometers attached to Equatorial; determination of latitude by prime-vertical-transit. Text-book, Chauvenet.

4th year:—Theoretical Astronomy—Orbit work and perturbations. Text-books, Gauss, Bessel and Oppolzer.

Practical Astronomy—Observation and reduction of Meridian work; determination of constant errors of Meridian Circle. Text-books, Bessel and Chauvenet.

MECHANICAL ENGINEERING.

The subjects for the second and third years are pursued by the students in Mechanical Engineering as well as by those in Civil Engineering.

(1) *Mechanics*:—(2nd year.)

Fundamental and Derived Units. Maintenance of Units. Measurements. Notions of Mass, Velocity, Acceleration, Force, etc. Representation by Vectors. The Hodograph. Newton's Laws of Motion. Stress. Division into Kinematics, Kinetics, and Statics. Composition and Resolution of Forces. Moments. Couples. Distributed forces. Centre of gravity. Uniform and uniformly varying Stress. Moment of Inertia of a surface. Fluid Pressure. Hydrostatic Press, etc. Equilibrium of Floating Bodies. Friction. Frictional Stability. Friction of Bands. Kinetics. Absolute measurement of Force. Work and Energy. Conservation of Energy. Momentum. Collisions. Rotation of a particle. Conical Pendulum. Simple Harmonic Motion. Simple Pendulum. Rotations of solid bodies. Properties of the centre of Percussion. Compound Pendulum. Most general movement of any mass. D'Alembert's Principle. Reduction of Resistance and Inertia to a Driving Point.

Miscellaneous propositions in Kinematics. Instantaneous axis. Centroids. Composition of Rotations and Translations. Degrees of Freedom and Constraint. Straight-line motion by Linkwork.

This course is attended by the students of the Physics, Mathematics, and Astronomy Sections, as well as by the students of Engineering. Throughout this (as well as all the other courses in this department) numerous practical examples will be given in the class, and questions set for

solution at home, so as to accustom the student to apply mechanical theory to engineering problems.

The students of the Mining section attend a different course of lectures in Mechanics, which bears more directly upon their profession ; the following is the syllabus :—

Applications of Statics and Dynamics to the Elasticity and Strength of Materials. Outline of theory of structures—graphical methods of Calculations being specially treated. Principles of Mechanism and their application to the proportion of Machines. Statics and Dynamics of Fluids. General Principles and Construction of Prime Movers,—Overshot, Breast and Undershot wheels, Turbines, Water Pressure Engines, Windmills, Steam Engines. Different Classes of Hand and Steam Pumps, and other Hydraulic Machinery.

During the year many visits are made to different works in Tokio where the uses of Machines and Prime movers are explained and referred to in the lectures.

(1) *Thermodynamics and the Steam Engine :—(3rd year.)*

General doctrine of the Conservation, Transformation, and Dissipation of Energy. Sources of Natural Energy. Measurement of Heat and Temperature. Scales of Temperature. Transference of Heat. Conduction. Theory of Exchanges. Action of Heat on bodies. Internal and External work. Specific Heat. Latent Heat. Physical properties of Steam and Gases. Boyle's, Charles', and Joule's Laws. Carnot's cycle of operations. Reversible Heat Engines. Limit of Efficiency. Stirling's and Ericsson's Air Engines. Expansion of steam. Indicator diagrams, ideal and actual. Steam Jacket, Superheated Steam. Compound Engines. Calculation of water required by Boiler and Condenser, etc. Experimental determination of the efficiency of a Steam Engine.

Furnaces and Boilers, their construction and efficiency. Fuel. Distribution of Steam. Slide-valve. Link motions. Expansion valves. Governors. Automatic expansion gear. General arrangement of Steam Engines of various types. Constructive details. Other prime movers.

The study of theoretical Thermodynamics will, as far as possible, be completed during the First Term, in order that the students of Physics, etc., may attend that part of the course.

(2) *Mechanism* :—(3rd year.)

Workshop appliances. Machine Tools. Kinematics of Mechanism. Frictional Efficiency of Mechanism. Machine Design.

During this course frequent reference will be made to the collection of hand and machine tools in the Engineering Laboratory.

At the end of the Third Year the students of Mechanical Engineering will be sent immediately to the workshops of the Naval Dockyard at Yokosuka, where they will spend about nine months in passing through the various departments, gaining practical experience of the work done in each by actually taking part in it. After this they will return to the University and spend the remainder of the Fourth Year in designing machines, and in the preparation of the Graduating thesis.

Books of Reference.

2nd year. Rankine's Applied Mechanics; Thomson and Tait's Elements of Natural Philosophy; Maxwell's Matter and Motion.

3rd & 4th years. Rankine's Applied Mechanics; Rankine's Steam Engine; Cotterill's Steam Engine; Maxwell's Heat; Shelley's Workshop Appliances; Goodeve's

Elements of Mechanism; Unwin's Machine Design;
Rigg's Practical Treatise on the Steam Engine, etc.

CIVIL ENGINEERING.

The subjects for the second and third years are pursued by the students in Civil Engineering as well as by those in Mechanical Engineering.

Besides the general studies of each year, the students in Engineering take up the following studies in the department of Civil Engineering ;—

During the second year, Surveying in all its branches except Geodesy, viz., Chain Surveying, Compass Surveying, Adjustment of Instruments, Transit Surveying, Levelling, Hydrographical Surveying, and Contour Surveying, one entire day from 8 a.m., until 6 p.m., in each week being devoted to field work, except when the weather is very unfavourable, when the students spend the time in topographical drawing, the plotting of surveys and the making of maps. The field work in Hydrographical Surveying occupies six or eight consecutive days.

The text-books used in these courses are Gillespie's Land Surveying, Gillespie's Higher Surveying, and Bell's Method of Angular Cross-Sectioning.

There is also taught in this year the laying out and construction of common roads, the text-books being Gillespie's Roads and Railroads, Gilmore's Roads, Streets and Pavements, Mahan's Civil Engineering and Trautwine's Pocket-book, special attention being paid to those kinds of roads which would be applicable to Japan.

In this year are given also a course in Properties of Materials used in Construction and a preliminary course in Resistance of Materials, the text-books used being Gilmore on Limes, Hydraulic Cements and

Mortars, Anderson's Strength of Materials, Bauerman's Metallurgy of Iron, and Wood's Resistance of Materials. Special attention is paid to the growth and preservation of timber, the production of the various kinds of iron and steel, and the testing and use of hydraulic cement. All these courses are supplemented by lectures and all necessary explanations. •

The courses pursued during the third year are Sewerage, Railroading, Resistance of Materials, Geodesy, and Foundations.

Under the head of Sewerage is given a short course in Sanitary Engineering, showing how this important branch of Engineering needs improvement in the large cities of Japan. The text-books, used are Fanning's Water Supply, and Adam's Sewers and Drains for Populous Districts.

Considerable time is devoted to the course in Railroading: the theory of it is first taught, the students practising from time to time in the field the methods of laying out straight lines and curves, levelling, cross-sectioning, slope staking, laying out drains and borrow pits, driving grade plugs, etc., after which they make a preliminary survey of a line between two given points several miles apart, then locate it, make preliminary estimates of cost and lay out the work for construction so completely that the ground would be ready for contractors to begin work upon the whole of it at once. Having thus completed the field work, the students make a finished plan and profile of the line, plot all the cross sections, make drawings for culverts, etc., and prepare specifications for letting the work. The text-books used are Henck's Field Book, Waddell's Notes on Railroading, Gillespie's Roads and Railroads, Pease's Protection to

Railroad Embankments from Washouts, Vose's Manual for Railroad Engineers, Waddell's Notes on Railroad Drainage, Barry's Railroad Appliances, and McClellan's Grades and Curves.

The course in Resistance of Materials consists of the theory of elasticity, the stresses, bending moments, deflections, etc., in beams and columns, the theory of resistance to torsion, the effect of repeated applications of stresses on iron and steel, and the flow of solids; the text-books used being Wood's Resistance of Materials, and Weyrauch's Structures of Iron and Steel.

Geodesy is taught by lectures, and includes the measurement of base-lines, the selection of stations and the erection of signals, measurement of angles, the reduction of a geodetical survey by the method of least squares, the determination of latitude, longitude and azimuth, the determination of the heights of stations, geodetical levelling and the construction of maps.

Foundations too, are given principally by lectures, and include pile driving, cribs, bents, cylinders filled with concrete, masonry piers built on both rock and timber foundations, screw piles, coffer dams, caissons, pneumatic cylinders and underpinning.

The fourth year courses consist of Bridges and Roofs, Hydraulics, Arches, Retaining Walls, etc., and Hydraulic Motors.

A large portion of the course in Bridges is given by lectures, but there are many text-books and books of reference used: among others, Burr's Bridge and Roof Trusses, Waddell's System of Designing Highway Bridges, Mahan's Civil Engineering, C. Shaler Smith's Wind Pressure upon Bridges, Carnegie's Pocket Companion,

Waddell's Bridge Pins—Their Sizes and Bearings, Bouscaren's Strength of Wrought Iron Columns, and Vose's Manual for Railroad Engineers. A great deal of attention is given to this course, and, the students are required to make out complete diagrams of stresses and sections, bills of material and estimates of cost for two or three iron highway bridges, two or three combination highway bridges, and one or two iron, combination and wooden railroad bridges. The subject of braced piers is also thoroughly treated. Much care is taken in teaching the students how to design details and to figure their sizes, the number and spacing of the rivets, etc.

Finally each student is given a list of data for a bridge to be taken as a thesis, and he is required to determine the most economic depth of truss and number of panels, then make all the working drawings necessary to construct the bridge, and the specifications for letting the contract. A thesis is also given on the foundations for the bridge, the data for the stream crossing being assumed.

The course in Hydraulics includes a study of the Mathematical Theory of Fluids, a discussion of the various, formulæ for the velocity of water in rivers and conduits—the construction of canals, works for irrigation and storage reservoirs, the improvement of navigable rivers, the protection of the banks of rivers and the construction of docks, piers and harbours. The text-books and books of reference used are Weisbach's Mechanics of Fluids Vols. I and II, Fanning's Water Supply, Baermann's Annual Rainfall in its Relation to the Water Supply of a City, Rankine's Civil Engineering, Jacob's Design-

ing and Construction of Storage Reservoirs, Neville's Hydraulic Formulæ, Rankine's Applied Mechanics, Francis' Lowell Hydraulic Experiments, Kutter's Hydraulic Tables, and Reports of the Chief of Engineers of the U.S. Army.

There is time devoted to the use of the tachometer, and the gauging of streams. There is no thesis in this course, but the students are required to work out a number of practical hydraulic examples.

The course in Arches, Retaining Walls, etc., includes theory of earth pressure and the ellipse of stress. The text-books are Burr's Theory of the Masonry Arch, Rankine's Applied Mechanics, Baker's Actual Lateral Pressure of Earthwork, and Jacob's Practical Designing of Retaining Walls. Each student is required to make a design and estimate of cost for a retaining wall and another for a stone arch.

The course in Hydraulic Motors includes the Mathematical investigations, of the efficiencies of over shot, under shot, and breast wheels, turbines and windmills, such as are used for pumping water, and the practical construction of the same. The text-books are Weisbach's Mechanics of Engineering Vol. II, Rankine's Applied Mechanics and Bresse's Water Wheels. Each student is required to design and make the working drawings and estimate of cost of a wheel for a particular fall of water.

In all the courses in Civil Engineering the lectures system is made subordinate to the use of text books, lectures being given upon only those subjects, with which the students are pretty well acquainted, or upon those for which no text books can be obtained.

ARCHITECTURE.

The study of Architecture is pursued in the two departments of Civil Engineering, and of Mining and Metallurgy by means of lectures during the fourth year. It is pursued, not as a separate and independent course, but as a supplementary study which is necessary for the thorough qualification of the students who graduate in these two departments; and, therefore, in the short time devoted to it, anything like a complete and satisfactory study of the subject is impossible. It is hoped, however, that the students will take advantage of these lectures and acquire such a knowledge of the subject as will enable them to distinguish between good and bad architecture, and to apply the artistic principles they learn to their own designs.

The study is divided into Practical and Theoretical Architecture. Under the first head, lectures are given on Building Construction and Materials, and to obtain a clear understanding of the subject the students are taken through the process, step, by step, of the erection of an ordinary building, from the laying of the foundation, up to the roofing. The interior finish is then considered, when various methods of ornamenting walls, etc., are also explained. The lectures that follow under this same head deal with the materials which are usually employed for building purposes, particular attention being paid to the manner of selecting the best specimens, the methods of preserving them, etc.

Under the second head, the artistic phase of the subject is considered, and as the best mode of understanding this, a brief history of Architecture, as it originated and developed in various European and other countries, is

given. Thus, Indian, Egyptian, Grecian, Roman, and other orders of Architecture, are gone through, special attention being paid to those distinguishing features which characterise each, and cause them to form distinct schools or styles of Architecture.

As an introduction to the course of these last lectures, remarks are made with regard to the principles and elements of good Architecture, which are calculated to serve as a guide to the students both in themselves designing and in forming a critical estimate of the works of others.

DRAWING.

The course of drawing extends over three years, and is principally mechanical, the students having studied free-hand drawing in the preparatory course.

The first year is devoted to the study of Descriptive Geometry, and its application to problems.

The second year is principally taken up with Machine Drawing made either from other drawings or from models.

In the third year, the first term is devoted to coloured drawings of machines; the second term, to bridges and other structures in civil engineering; and the third term to coloured topographical drawings.

It is the aim in the department of drawing to give the students instruction in the kind of drawing which they will need in completing the studies of the various departments of the University; hence it is impossible to mark out more minutely the work done by each student.

MINERALOGY AND GEOLOGY.

1st year Science.:—A short introduction to physical and chemical mineralogy allows the student to understand the close connection between the crystallographical, physical, and chemical properties of the minerals. In the descriptive part classification is first discussed, then the more important minerals, especially those occurring in Japan are described according to the system adopted.

During the last term these outlines of mineralogy are followed by a brief sketch of geology. Physiographic, lithological, dynamical, and historical geology are taught in outlines only, and if possible illustrated by examples from Japan.

2nd year.:—In mineralogy crystallography and optics are treated more explicitly, and always with special respect to the rock-constituents. In the descriptive part, many of the rare minerals are included for their systematic or theoretical interest, e.g., the members of isomorphous and pleomorphic series are enumerated in full. In the practical part of this lecture the student has to determine the mineral by the physical characters, viz., lustre, streak, colour, hardness, specific weight and crystallization.

In the blowpipe analysis the same purpose is reached by chemical means. Therefore after a short discussion of the blowpipe and the blowpipe materials the reactions which the different elements and compounds exhibit in the flame, on charcoal, with fluxes, with cobalt solution etc., etc., are practised in the determination of salts, oxides, silicates, sulphides, arsenides, and alloys.

The lecture on historical geology plays an important

roll in this year's programme. The introduction refers to the structural arrangement of the rock-masses. Then the different groups, systems, series, etc., and the respective eruptive rocks are discussed in the order of their age. Special care is given to the leading fossils and to the distribution of the different systems within Japan or on the borders of the Pacific, for in most cases the geological features of the great Pacific area are of higher importance to the Japanese geologist than detailed descriptions of European sections. Geological excursions illustrate the lecture and at the end of this year a fortnight excursion is made under the care of an assistant.

3rd year. The lecture on lithology renders the student familiar with the constitution of the more important rocks. In paleontology the greater time is devoted to the animal kingdom. The different subkingdoms are treated in their natural order, beginning with lowest. The laws of development as yet established, the range in time and the geological importance of the respective orders, families and genera are always mentioned. Finally a brief sketch of palaeobotany is given. In the determination of fossils the subkingdom of mollusca is the special subject. After the student becomes quite familiar with it also other fossils as corals, echinodermata, are laid before him. In general geology the physiographic part (including the form, size, density, magnetic phenomena and the surface-features of the earth together with the system in the oceanic and atmospheric currents and in the distribution of organic life) is followed by a brief sketch of the architectonic geology. Then the forces are discussed which have produced the geological changes, viz., the destructive and formative work of the four

agencies: heat, atmosphere, water and organic life. This part includes therefore a treatise on the volcanic and seismic phenomena, on decomposition and erosion, on coralreefs and coal formation, etc., etc.

Geological surveying and mapping are taught theoretically and practically and at the end of this year the student surveys for himself a district assigned to him by the professor.

4th year. The time of the student is especially devoted to the graduating thesis. The materials collected during the summer vacation are examined under the care of the professor and described according to the regulations previously issued. The field and indoor-work are combined into a report which is to be accompanied by a topographical and geological sketch map of the district surveyed. The lectures in this year are on microscopy of rocks and on ore-deposits. In the former the discussion of the rock-constituents and the systematical description of the rocks themselves are accompanied by practical exercises in determination. In the latter the classification of the metalliferous deposits is followed by the theories on their origin. The descriptive part discusses the manner of occurrence of the different ores in the more important mining districts. Special care is given to their distribution within the different systems and eruptive rock-masses. If possible Japanese mines are referred to. An appendix treats of the useful minerals as coal, rock-salt, mineral oil, etc., etc. Finally a theoretical retrospect shows how far theory and facts agree together.

Text-books and books of reference:

Mineralogy. Nicol's Manual; Dana's Text-book; Nau-

mann's Elemente; Weisbach's Tables; Plattner's Blowpipe-analysis.

Lithology. Rutley's Introduction; Rosenbusch's Physiographie; Zirkel's Manual.

Geology. Lyell's Elements; Dana's Manual; Cotta's Treatise.

Paleontology. Zittel's Handbuch; Nicholson's Manual; Woodward's Mollusca.

MINING AND MATALLURGY.

1. *Metallurgy.*

a. General Metallurgy.

History of Metallurgy.

Properties of metals and their important compounds.

Metallurgical Processes.

“ Materials (Fuel inclusive).

“ Apparatus.

“ Products.

“ Wastes.

b. Applied Metallurgy.

Metallurgy of Lead, Copper, Silver, Gold, Platinum, Mercury, Zinc, Cadmium, Tin, Arsenic, Antimony, Bismuth, Cobalt, Nickel, Iron.

2. *Mining.*

Mode of occurrence of useful Minerals.

Prospecting, Earthboring, Exploration of Deposits.

Miner's work and Miner's tools.

Opening, preparing, and working of Mines.

Securing of Mines (Walling and Timbering).

Underground conveyance.

Appliances in shafts for descent and ascent of men.

Ventilation and Illumination of Mines.

Prevention and Extinction of fires in Mines.

Drainage of Mines.

8. *Metallurgical and Dressing Experiments.*

The laboratory in which the metallurgical experiments are conducted is supplied with a small reverberatory calcining and several smelting and retorting furnaces, while the dressing laboratory contains a wooden three-stamp battery, a Rittinger percussion-table, a Blake's rock breaker, a system of cylindrical screens, a continuous hydraulic jigger, etc.

A sufficient quantity of ores for experiments is supplied from the following Mines :

Gold and Silver Ore from Sado and Ikuno.

Silver “ “ Innai, Karuisawa, Kosaka.

Copper “ “ Besshi, and Yoshioka
(Bishiu) Ikuno.

Mercury “ “ Wada (Yamato).

Lead “ “ Mandokoro (Omi).

Tin “ “ Taniyama (Satsuma).

Iron “ “ Nakakosaka.

Antimony “ “ Amakusa (Higo.)

The students have to find out the best way of treating the ores mechanically and metallurgically, and have to determine the losses in metal during such treatment.

New methods for reduction are subjected to practical tests.

Those gentlemen who wish to get information as to the best treatment of their ores are requested to apply to the University.

4. *Designing Metallurgical and Mining Apparatus and Establishments.*

General and working drawings of Mining and Smelting Apparatus are to be made by the students. Estimates of quantity of materials as well as of the cost of their practical execution are to accompany the drawings.

From these drawings, models for the Museum are made by the University. The more advanced students are to design whole establishments for producing or reducing a certain amount of a given ore per year.

To give them an idea of the cost of foreign materials and machinery, price lists from foreign firms have been collected.

The lectures are illustrated by a number of models, diagrams, and specimens of tools, ores, intermediate and final metallurgical products, slags, etc.,—foreign as well as native.

Models and diagrams are constantly being added to the collection, special attention being paid to models and diagrams of such Machines and Apparatus as can be made in Japan.

References for the study of Metallurgy are to be made chiefly to Bloxam's Metals, etc., Greenwood's Manual of Metallurgy, Lamborn's Metallurgy of Copper, Lamborn's Metallurgy of Silver and Lead, Percy's metallurgy of copper, lead Ai. and Kerl, Huettenkunde.

ASSAYING AND BLOWPIPE ANALYSIS.

General lectures on Assaying, followed by laboratory practice, are delivered to the fourth year students of Mining, Metallurgy, and Chemistry.

The laboratory practice of the Chemical students is confined to the assaying of Gold, Silver, Copper, and Lead.

a. Apparatus for assaying in the dry way.

Furnaces.

Assay vessels.

Balances and weights.

b. Fluxes for smelting.

Reducing flux.

Oxydising flux.

Dissolving flux.

Precipitating and desulphurating flux.

Concentrating flux.

Volatilizing flux.

c. Reagents for assay in the wet way.

d. Assay of moisture in ores.

e. Assay of silver.

Scorification.

Cupellation.

Concentration.

Crucible method.

Combined assay of silver and lead.

Alloys.

f. Assay of silver in the wet way.

Gay—Lussac's process.

g. Assay of gold.

Scorification.

Cupellation.

Parting of gold from silver in the wet way.

Plattner's process.

h. Assay of lead.

Belgic method.

Harz method.

Freiberg method.

Assay with sulphuric acid.

- i. Assay of copper.
 - a. Assay in the dry way.
 - German method.
 - English method.
 - b. Assay in the wet way.
 - Swedish method.
 - Mansfeld process.
 - Pelouze's method.
 - Parke's method.
 - Colorimetric copper assays.
- j. Assay of Nickel and cobalt.
 - a. Assay in the dry way.
 - b. Assay in the wet way.
 - Winkler's method.
 - Electrolytic process.
- k. Assay of Zinc.
 - a. Assay in the dry way.
 - Berthier's method.
 - b. Assay in the wet way.
 - Schaffner's method.
- l. Assay of Tin.
 - Cornwall's method.
 - German method.
 - Winkler's mode.
- m. Assay of antimony.
 - Determination of the pure sulphide of antimony.
 - Determination of regulus of antimony.
- n. Assay of mercury.
 - Distillation.
 - Method used in Idria.
 - Eschka's process for assaying mercury ores.
- o. Assay of iron.

- a. Assay in the dry way.
- b. Assay in the wet way.
- p. Assay of fuels.

During the third and fourth years of Mining and Metallurgy, lectures on blowpipe analysis are delivered, and practical instruction in qualitative and quantitative analysis with blowpipe is also given.

1. The blowpipe and its use in chemistry and mineralogy.
2. The fuel.
3. The blast and flame.
4. General rules on the heating of substances.

Examination of the substances as in the closed tube and open tube.

Examination of the substance on charcoal.

Examination of the substances as to fusibility and the color which is imparted to the outer flame.

5. Examination of substances with reagents.

“ “ “ borax.

“ “ “ salt of Phosphorus.

“ “ “ soda.

“ “ “ cobalt solution.

6. General rules for qualitative blowpipe Examinations.
- Examination for salt-like substances.

“ “ metals or their oxides.

“ “ silicates.

“ “ sulphides and arsenides.

“ “ metals and their alloys.

7. Quantitative blowpipe assays.

a. Silver assay.

Scorification.

Cupellation.

b. Gold assay.

Scorification.

Cupellation.

Parting of gold from silver.

c. Copper assay.

Ores, minerals and metallurgical products.

Alloys.

d. Lead assay.

a. Method for sulphides.

b. Method for oxides.

e. Bismuth assay.

a. Method for sulphides.

b. Method for oxides.

f. Tin assay.

Ore, minerals and products containing tin as sulphide.

Ores, minerals and products containing Tin as oxide.

Alloys.

g. Cobalt and nickel assay.

Minerals, ores, etc., containing nickel and cobalt as sulphide or arsenide.

Minerals, ores, etc., containing nickel and cobalt as oxide.

Alloys.

h. Iron assay.

i. Chromium assay.

j. Mercury assay.

k. The Examination of coals.

In the second year of Geology and Chemistry, lectures—

on blowpipe analysis are also delivered and the students are trained in qualitative analysis.

PHILOSOPHY.

Logic being of great importance in relation to every department of investigation and study, the students of all the three Departments, Law, Science, and Literature, are instructed during their first year in this subject, in addition to the more special ones of their respective courses.

Text-books :—Jevons' Elementary Lessons in Logic; Everett's Science of Thought.

Philosophy is divided into Oriental and European; in Oriental Philosophy the History of Philosophy is taught during the second year, and Hindoo and Chinese Philosophy during the third and fourth years.

(1) The History of Oriental Philosophy :—To study the historical development of Oriental philosophy, Hindoo, and Chinese philosophy are the most important subjects to be considered; but as Japanese philosophy originated principally from Chinese philosophy, and as the recent Chinese philosophy was founded upon the philosophy which prevailed before the Shin and Kan dynasties, Confucianism and several branches of Taoism are therefore taken up; their systems and principles are discussed; their relations, historical courses, and several branches are investigated so as to lead the students to the general field of Oriental philosophy. The books of reference are Rongo, Moshi, Daigaku, Chiüyo, Roshi, Soji, Reeshi. Junshi, Bokushi, Kanpishi, Yoshisauron, Yoshihogen, Kanshi and Yenanji.

(2) Hindoo and Chinese Philosophy :

In this course of lectures, the systems and principles of Buddhism and Confucianism are briefly taught during the third and fourth years, and in the fourth year, lectures on Taoism are also given. The text-books are Hatshiu-Koyo, Hogiohen, Shikiogi, Yuimakio, Daigaku, Chiuyo, Rongo, Moshi, Shikio, Shokio, Yeki, Roshi, and Soji.

In European Philosophy, Psychology, History of Philosophy and Sociology, are taught for the second year, Modern Philosophy for the third year, and Psychology and Moral and Aesthetic philosophy for the fourth year.

(1) Psychology :—(*For Second year.*)

A systematic exposition of Mind and the First Principles of Philosophy. The student is instructed in the Physiology of the Mind, and is made to see that there exists a very close connexion between the body and the mind; that the mind is no such absolute autocrat as has been imagined by some metaphysicians, but that all its actions, including volition itself, are not independent of the states of the organism.

The books used :—Bain's Mental Science; Carpenter's Mental Physiology; Maudsley's Physiology and Pathology of the Mind; Abercrombie's Intellectual Powers of the Mind; Haeckel's History of Creation; Spencer's First Principles of Philosophy; Spencer's Principles of Biology; Spencer's Principles of Psychology, etc.

(2) History of Philosophy :—

An outline of the history of ancient and modern European Philosophy. The larger share of attention will be given to modern Philosophy from Descartes to Hegel and Spencer. The aim will be to discover some unity under-

lying the whole movement, and not merely to make independent study of isolated systems. This forms a valuable introduction to the special study of present working systems. Lectures, with Schwegler's History, and Bowen's Modern Philosophy as reference books.

(8) Sociology :—

An outline. Sufficiently distinct to exhibit the more important of the mechanical conditions under which alone any Philosophical end can be realized. Lectures, with reference to Spencer's Sociology, and Morgan's Ancient Society.

(4) Modern European Philosophy :—

In this course will be studied in greater detail the systems of three of the most eminent of modern thinkers ; but light will be thrown upon them by constant comparison with the views of others. The systems are those of Kant, Hegel, and Spencer, selected as having the most important bearing upon problems of the present day.

The books used will be Kant's Critique, Wallace's Logic of Hegel, and Spencer's Principles of Psychology Vol. II, together with portions of Mill's Examination of Hamilton, and portions of Hume's Human Nature. Lectures.

(5) Psychology :—(*For Fourth year*)

A more advanced course in Psychology and also the study of such subjects as the following,—the comparison of the mental powers of man and the lower animals ; mental evolution during primæval and civilized times ; emotional and intellectual language in animals and man ; volition in culture.

The Books used :—

Darwin's Origin of Species ; Darwin's Descent of Man ;

Darwin's Expression of the Emotions in Man and Animals; Lewes' History of Philosophy; Lewes' Problems of Life and Mind; Lewes' Physical Basis of Mind; Tyler's Primitive Culture, and Early History of Mankind; Lubbock's Origin of Civilization; Lecky's Rationalism in Europe; Spencer's Universal Progress; Spencer's Principles of Psychology; Fiske's Outlines of Cosmic Philosophy; Spencer's Recent Discussions; Mill's Dissertations, and Discussions; Ribot's Heredity; Ribot's Diseases of Memory; Sully's Illusions; Galton's Hereditary Genius, etc.

(6) Moral and Aesthetic Philosophy :—

The course in Ethics will consider the validity of modern attempts to construct a scientific theory of Morals, and a rational deduction of sound Ethical precepts.

The course in Aesthetics will elucidate those principles of criticism which rule in the formation of correct taste in the several departments of Fine Art. Lectures, with Sidgwick's Methods of Ethics for text-book. Reference will be made to other writers, such as Calderwood, Bentham, and Spencer in his Data of Ethics.

POLITICAL SCIENCE.

A preparatory statistical lecture is held for the second year students, where a short description of the important states, their constitutions, finances, economical development, is given.

The course in Political Science covers two years. The lecture for the third year class introduces the students to the principles of Public Law, illustrated by continual reference to the institutions which actually exist in the leading countries.

The disposition of the lectures is the following :

Introduction. The organizations of human social life :—
individual, family, nation, community, society (especially religious society), State.

I.—STATE AND PUBLIC LAW.

- a. Sovereignty, Law, and People :—Sovereignty, pre-tented sovereignty of the people, and contrat social; territory ; the people, duties and rights of subjects ; inhabitants ; acquisition and loss of the quality of subject.
- b. Sphere and limits of the state :—Opposed theories on the sphere of state ; individualism and socialism, state cares for administration of law and for general welfare (outward and inward); Sphere of state changing in history, and different peoples ; limits of state relating to individual life or so called civil rights.
- c. Form of state and government :—Constitutions of states, different in different times ; common errors regarding the best form of government ; Aristotelian division of states ; other theories ; historical development ; patriarchal and despotic conquest state ; ancient city state, theocracy, feudal states ; modern states, development ; absolute monarchy, constitutional representative government, democracy, composite states.
- d. Limits of Political Science :—Relation to other sciences.

II.—ORGANS OF THE STATE.

Introduction :—Criticism of the theory of the division of the powers ; state power only one.

- a. The Monarch :—General position ; personal prerogatives ; acquisition of the crown ; capacity to succeed ; effect of the succession ; usurpation ; representation of the monarch, regency ; abdication.
- b. The public service :—Nature ; duties of public officers ; rights ; entrance into the public service and end.
- c. Representation of the people :—Nature and common errors ; formation ; forms of transaction.

III.—FUNCTIONS OF STATE-POWER.

- a. Legislation :—Law, customary and unwritten ; statute and ordinance ; publication.
- b. Jurisdiction :—Nature ; “voluntary jurisdiction” ; organization ; government and justice, especially the “Ministère Public ;” pardon ; administrative jurisdiction in different countries ; conflicts of attribution.
- c. Administration :—Administration not executive power ; central government, council of state ; ministries ; administration of foreign affairs ; of home affairs ; organization in general ; self-government ; England, France, Germany ; administration of local communities.

IV.—THE MEANS OF THE STATE-POWER.

- a. Finances :—Public property ; revenue, especially taxes ; expenditure ; debt ; the budget ; organization of the administration in different countries ; the control.
- b. Administration of army and navy.

V.—SHORT ACCOUNT OF THE DEVELOPMENT OF POLITICAL SCIENCE SINCE THE TIME OF HUGO GROTIVS.

Books of reference principally used :

Woolsey, Political Science.
Bluntschli, Lehre vom modernen Staat.
Von Mohl, Enzyklopädie der Staatswissenschaften.
Lieber, Civil Liberty and Self-government.
Gerber, Grundzüge des Staatsrechts.
Hom. Cox, Institutions of England.
Brodrick, Local Government in England.
De Franqueville, Local Government in France.
Morie, Local Government in Germany and England.
E. Meier, Verwaltungsrecht (in Holtzendorff's Encyclopædia).

ADMINISTRATIVE SCIENCE.

The lectures for the fourth year class give more in detail the organization of home-administration, and the laws which are to be carried out by this organization, in the following order :

Introduction :—Nature of administrative science.

I.—*Organization* :—In general ; law and administration ; states and local communities ; self-government ; police (repressive, preventive) ; description of the organization in detail of the most important countries ; administrative jurisdiction.

II.—*Administrative laws* :

a. Law of persons :

1. Physical life :—Population ; statistics ; civil state ; emigration and immigration ; settlements ; poor-relief ; public health ; dearth.

2. Mental life :—Education ; morality ; religion ; arts.

b. Economical law :

1. Agriculture ; forests ; hunting ; fishing ; mining.
2. Industry and commerce.
3. Copyright ; patents ; trade marks, etc.
4. Weights ; measures ; markets ; currency ; banking ; exchange.
5. Locomotion ; highways ; waterroads ; railway ; post and telegraph.

c. Social law :

1. Corporations ; associations ; meetings ; press.
2. Working classes (saving banks, etc.)
3. Insurance (fire, water, etc.)

The books of reference (besides the above mentioned)

R. von Mohl, *Die Polizeiwissenschaft*.

L. von Stein, *Handbuch der Verwaltungslehre*.

A. Batbie, *Précis du cours de droit public et administratif*.

M. Ducrocq, *Cours de droit administratif*.

M. Block, *Dictionnaire de l'administration*.

R. von Mohl, *Geschichte und Litteratur der Staatswissenschaften*.

W. Roscher, *System der Volkswirtschaft*. (The first part in the translation by Lalor).

Besides these, the students are made acquainted with the more important literary productions bearing on the subject.

POLITICAL ECONOMY.

In order to give the students in the second year an adequate idea of the scope of the subject, the fundamental truths of the science are laid before them as completely as possible in the limited space of time.

Text-books :—Fawcett's Elements of Political Economy (partly); Mill's Principles of Political Economy (partly); Roscher's Principles of Political Economy.

In the third year there are two courses of lectures, (1) on Currency and Banking, (2) on Japanese Finance. (1) Currency and Banking :—

A study in detail of all parts of the theory of this subject, illustrated by the modern financial history of leading nations. The books chiefly in use will be McLeod's Theory and Practice of Banking, Jevon's Money and the Mechanism of Exchange, Sumner's History of American Currency, Seyd's Bullion and Foreign Exchanges, Walker's Money. Lectures.

(2) Japanese Finance :—

Under this head the financial organization and history of the Tokugawa Government, as well as the financial history of the present Government, are thoroughly given, the present state of finance is discussed, and also money, taxation, and customs are studied. Also the origin and history of the national banks in Japan are lectured upon, and the practice of Banking explained.

In the fourth year there are also two courses of lectures, (1) on Labor, Taxation and Public Debt, (2) on Japanese Finance.

(1) Labor, Taxation, and Public Debt :—a consideration of these subjects in detail theoretically and historically.

Books in use :—Baxter's Taxation of the United Kingdom; Cairnes' Leading Principles of Political Economy; Thornton's Labor; Byle's Sophisms of Free Trade; Bastiat's Sophisms of Protection; Sumner's History of Protection in the United States; Baxter's National Debts; Goschen's Local Taxation; Walker's Wages Questions.

Lectures.

(2) Japanese Finance :—

The lectures already begun in the third year are continued throughout this year.

JAPANESE LITERATURE.

In the first year, Goibekki and Kotoba-no-shiori are read by the Law and Literature class. In the course of Japanese and Chinese Literature, Taketori-Monogatari, and Makurano-Sōshi are explained by the professor in addition to these books.

In the second year, Taketori-Monogatari and Makurano-Sōshi are studied in the courses of Philosophy, and of Political Science, and Political Economy; in the course of Japanese and Chinese Literature, Ookagami, Genji-Monogatari and Shoku-Yotsugi. Besides, in the latter course, Masukagami, is required to be read in private and the professor will explain difficulties at the time assigned for such purpose.

In the third year, Genji-Monogatari and Manyōshū are taught to the students in Philosophy, Political Science, and Political Economy; in the course of Japanese and Chinese Literature, the study of Genji-Monogatari is continued from the preceding year, Kojiki and Manyōshū are read, and also Kogoshūi and Kokinshū are required to be read in private as in the year preceding.

In the fourth year of Japanese and Chinese Literature, the study of Kojiki and Manyōshū is continued from the third year with explanations by the professor, and Rikko-Kushi and Ruishū Sandai Kiaku are assigned for private reading.

In the course of Japanese and Chinese Literature

throughout the last three years, essays and poems are required once in two months.

For students who wish to read any other books than the text-books the following are selected, those selected for the first year class being here omitted:—

2nd Year.—Jikkunshō ; Uji-Shini ; Kokinshiu ; Gempei-Seisuiiki ; Tosa-Nikki ; Yeigamonogatari.

3rd Year.—Shoku-Nihongi ; Manyōshiu, from the 8rd volume ; Mizukagami ; Masukagami ; Sakubunritsu.

4th Year.—Nihon-Shoki ; Nihon-Kōki ; Adzumakagami ; Dokushi-Yoron ; Taiheiki ; Kotobano-Tamanoo ; Kotobano-Yachimata ; Kotobano-Kayoji.

CHINESE LITERATURE.

In the first year, the Law and Literature class read Shiki in the lecture-room ; students of the course in Japanese and Chinese Literature are required, besides, to read Moshi and Rongo and explain them before the professor.

In the second year of Literature, students of all the courses are required in turn to read Hachidaikabun in the lecture-room ; in the course of Japanese and Chinese Literature the study of Saden is also required, Shijitsugan being assigned for private study.

In the third year, students of Philosophy, Political Science, and Political Economy are required to read Saden and explain it in turn before the professor ; students of Japanese and Chinese Literature study Daigaku, Chiu-yō, Shikiō, Kampishi, and Junshi in the same manner. Also, Sōgentsugan is assigned to them for private study.

In the fourth year of Japanese and Chinese Literature, Yeki and Sōji are explained by the professor. Shokiō

and Rōshi are also studied, each student explaining them in turn before the professor. Minchō-Kiji-Hommatsu is selected for private study.

In the course of Japanese and Chinese Literature, essays and poems are required twice a month; other students are required to write essays twice a month.

Voluntary lectures are also given, on Kokon-Gakuhon to the second year, on Kampishi to the third year, on Shikiō to the fourth year students, of all the courses.

To those who desire to read, at their leisure, books other than text-books, the following are recommended;—

Daigaku; Chiuyō; Rongo; Mōshi; Shijitsugan; Sōgensugan; Mincho-Kiji-Hommatsu; Kokugo; Sengokusaku; Kanjo; Go-kanjo; Sangokushi; Tōjo; Godaishi.

HISTORY.

The students in the Departments of Law and Literature, having already acquired some knowledge of Universal History while they were in the Yobimon, are required to study both the history of England and that of France during their first year. The lectures are devoted during the first half year to the history of England, and during the remainder of the year to that of France. In order to give to the students some idea of social development they are also required to write occasional essays on the Philosophy of History, making reference to several works on the history of civilization.

Text-books :—Student's Hume; Student's France.

Books of reference :—Buckle's History of Civilization of England; Guizot's History of Civilization in Europe; Lecky's Rationalism in Europe; Draper's History of the Intellectual Development of Europe; Spencer's Principles of Sociology.

The course in history for the second year consists of the investigation of evolutions, social, political, intellectual, and religious. The subjects are treated solely with reference to the relation of cause and effect. As the time is so limited, it is, of course, impossible to enter into details of every important event, and the conditions specified for its existence can be but general ones, except in some few cases, where on account of the nature of the event it is thought especially profitable to discuss it more minutely.

The following are some of the subjects treated of in the course of our investigation :

Climate and geographical conditions ; physical and mental characteristics ; ideas, general, religious, moral, and political ; the relation between parent and child ; the relation between ruler and subject ; the relation between men and women ; the respective influence of warfare and peace upon national development ; manners and customs ; political revolutions ; religious persecutions ; literature and science ; the press and speech, etc.

The books in use are Spencer's Principles of Sociology, Bagehot's Physics and Politics, Maine's Ancient Law, Buckle's History of Civilization, Guizot's History of Civilization, Draper's History of the Intellectual Development of Europe, Leekey's History of European Morals, Leekey's Rationalism in Europe, Grote's History of Greece, Mommeson's History of Rome, Gibbon's Decline and Fall of the Roman Empire, Hallam's Middle Ages, Hallam's Literature, Thiers' History of the French Revolution, Hume's History of England, Ranke's History of England, Stubbs' Constitutional History of England, Leekey's History of England, etc.

ENGLISH LITERATURE.

A general acquaintance with the history of the language and literature being already possessed by the students, the best works of the principal writers are critically read and explained in the lecture-room. The object of the course being to enable the student to get as thorough knowledge of modern English as possible, no great attention is paid to works of any of the ancient writers and the works used are mostly those of some of the best modern writers.

Text-books : — Sprague's Master - Pieces in English Literature ; Shakespears's Plays, and some of the English literature publications of Tokio Daigaku.

FRENCH, GERMAN, AND LATIN.

The students in the Departments of Law, being required to study French Law, must take French during their first two years. In other departments, except in the Course of Japanese and Chinese Literature the students are required to study German during two years in the Department of Science, and during three years in the Department of Literature, in order to enable them in future to refer to German books for their further study. The study of Latin is required only of the students in Biology ; it is optional to all the students of Law and Science under certain conditions.

Text-books and books for private reading : Comfort's German Course ; Lüben and Nacke's Lesebuch ; Lamotte's Perrier ; Sommer's Abrigé de Grammaire Francaise ; Duruy's Petite Histoire des Temps Modernes ; Delacourtie's Elénents de Législation Usuelle ; Levasseur's

Cours d'Economie; Andrews and Stoddard's Latin Grammar and Reader.

KOTEN KŌSHIUKA.

In the first term the following books are read and explained in the lecture-room: in History, Kojiki, Nihongi, and Kogoshiui; in Law Rio-no-gige; in Kojitsu Kinbishō; in Literature, Manyōshiu, Kokinshiu, Tosa-nikki, Taketori-monogatari, Isemonogatari, Genjimonogatari, besides lectures on Jion Kaji-Kaki; in Chinese literature Tōsō Hakkabun.

In this term the following books are also required to be read in private, and the instructor will explain the difficulties at the time assigned for such purpose: Izumofūdoki; Shinsen-seishiroku; Shingōshōtōki; Jikkunshō; Uji-shiui-monogatari; Tsurezuregusa; Dainihonshi; Hokentaiki; Dokushiyoron; Koshicho-Kaidaiki; Tsugan-ranyō.

A certain number of poems or one essay is required every week from the student throughout the course; such essay must be written alternately in old and common styles.

In the second term the following books are read and explained in the lecture-room besides Kojiki, Nihongi, Rio-no-gige, Manyōshiu, Genji-monogatari, and Hakkabun which are continued from the last term: in History Yeiga-monogatari, Mizukagami, and Ookagami; in Kojitsu Gario-Shozokushō; in Literature Makura-no-sōshi. The following books are also required to be read in private besides Dai-nihonshi which is continued from the last term: Shoku-nihongi, Seidotsuu, and Tō-Rikuten.

In the third term the following books are read and explained besides *Kojiki*, *Nihongi*, *Yeiga-monogatari*, *Ookagami*, *Rio-no-gige*, *Manyōshū* and *Genji-monogatari* which are continued from the last term: in *History*, *Masu-kagami*; in *Law*, *Ruijusanukiaku*; in *Kojitsu*, *Nenjuijōreiki*, and *Dairishiki*; *Yengishiki*; *Shoku-nihongi*; in *law*, *Tōritsusogi*. *Nihon-kōki*, *Nihon-itshi*, *Shoku-nihon-kōki*, *Buntoku-jitsuroku*, *Sandai-jitsuroku*, *Jōkuan gishiki*, *Yengishiki*, and *Konjiaku-monogatari* are required to be read in private.

In the fourth term *Hōshiyōshō*, *Jōyeshikimoku*, *Kenbushikimoku* are read and explained in the lecture-room, and *Nihongi*, *Masu-kagami*, *Rio-no-gige*, *Dairishiki*, *Manyōshū*, and *Genji-monogatari* are continued from the last term; *Kōkeshidai*, *Fusō-riakki*, *Nihonkiriaku*, *Hiakurenshō*, *Shoku-yotsugi*, and *Yashi* are read in private. From this term the students begin to read and explain *Kojiki* and *Makurano-soshi* in turn before the instructor.

In the fifth term, *Nihongi*, *Rio-no-gige*, *Manyōshū*, *Genji-monogatari* and *Tōritsusogi* are continued and *Kōkeshidai*, *Rissozanpen*, *Seiji-yōriaku*, *Azuma-kagami*, and *Yashi* are read in private.

In the sixth term all the books studied in the last term are continued and *Chiōyagunsai* is the only addition to the private reading.

The object of this course being to investigate historical facts, old laws, etc., in such a way as to satisfy the direct needs of society, the students are required during the fifth and sixth terms to write an essay on the investigation of some old facts or systems, such as the old system of taxation, old military system, etc.

Many other books, which may be suggested for private reading and for reference in writing essays, are not here mentioned.

V.—ACADEMIC YEAR, TERMS, AND VACATIONS.

1.—The academic year begins on the 11th of September and ends on the 10th of July.

2.—The academic year is divided into three terms : the first term comprises one hundred and five days, extending from September 11th to December 24th ; the second term eighty-three days extending from January 8th to March 31st ; the third term ninety-four days, extending from April 8th to July 10th.

3.—The Winter vacation comprises two weeks, commencing on the 25th of December and ending on the 7th of January ; the Spring vacation, one week, commencing on the 1st of April and ending on the 7th of April, and the Summer vacation two months, commencing on the 11th of July and ending on the 10th of September.

4.—Lectures are suspended on Sundays and on the following national holidays :—

Shiuki Kōrei Sai.	Sept.	23rd.
Kanname Matsuri.	Oct.	17th.
Tenchō Setsu.	Nov.	3rd.
Niiname Matsuri.	Nov.	23rd.
Kōmei Tennō Sai.	Jan.	30th.
Kigen Setsu.	Feb.	11th.
Shunki Kōrei Sai.	March	21st.

5.—Lectures begin at 8.30 a.m., from November 1st to March 81st, and at 8 a.m., from April 8th to October 81st.

VI.—ADMISSION, ATTENDANCE, AND DISMISSAL.

1.—Students are admitted at the beginning of the academic year, but in exceptional cases they may enter at the beginning of the second or third term.

2.—Applicants for admission to a first year class must be at least sixteen years of age ; for admission to a second year class they must be at least seventeen years of age, and so on.

3.—Students to be admitted to a first year class must have completed the prescribed course in the Yobimon, or in case they have not studied in the Yobimon they must show, on examination held there, the same degree of proficiency as those who have completed the Yobimon course.

4.—Candidates for advanced standing are first examined on the subjects necessary for admission to a first year class and then on the subjects which have been previously pursued by the class which they propose to enter, and the results of these examinations are referred to the scheme connected with art. 8 of the regulation for examinations, in order to determine their admission. Those who have pursued their studies in any other college are exempted from examination on any subject in which they can show certificates satisfactory to the authorities of the University.

5.—No candidates are admitted later in any course than the beginning of the fourth year.

6.—If a student who has voluntarily left the University again applies for admission, in order to pursue the same course as he took before, he may be admitted during the first term, to the class of the same grade as the one in which he was when he left the University. Those, however, who desire to enter a course different from that which they took before, are subject to the rule mentioned in art. 4.

7.—Applicants for admission are required to present to the secretary of the University a written application according to the prescribed form, together with the certificate of the Yobimon to the effect that they have passed satisfactorily the entrance examinations held there. Students promoted from the Yobimon are admitted without formal application.

8.—A student admitted to this University is required to present, in accordance with the prescribed form, a bond executed on the part of himself and two guardians, one as a principal. The guardians must be male householders, above twenty years of age and must reside in one of the fifteen districts of Tokio Fu. In case the student can not obtain two guardians within these districts, he may be allowed to have a person who has a residence in one of the six *gun* of Tokio Fu, as one of his guardians.

9.—In case the guardian dies, or moves beyond the above fifteen districts or to other Fu, or Ken, a new guardian must at once be substituted to fill the vacancy, a new bond being executed according to the prescribed form.

10.—If either guardian desires to leave Tokio and travel

for more than four weeks, he must, before his departure, state such desire and provide a substitute having power of attorney; and when he returns he must also inform the secretary of his return. If both guardians leave the city at the same time, for a period of less than four weeks, they must first provide a substitute, and if their absence is longer than four weeks a second substitute must also be provided.

11.—If a day-student be absent from the class on account of sickness or other unavoidable cause, the guardian of such student shall send to the secretary, not later than the day following such absence, a note explaining the cause of absence; if he expects to be absent continuously for more than one day, the above note, mentioning also the number of days of his absence, shall be sent to the secretary, not later than the day following the beginning of such absence. In case the absence is prolonged on account of sickness for more than two weeks, a certificate from the medical attendant shall accompany the guardian's note.

N.B. A resident student, who leaves the boarding-house temporarily and attends the class as a day-student, shall be subject to this article.

12.—In case a student becomes, on account of sickness, unable to pursue his course on the ground that it is injurious to his health, and applies within one month from the beginning of the academic year for permission to select and pursue some other course, he may be permitted to do so after due consideration, according to the circumstances of the case.

13.—Any student, who, on account of negligence or misconduct or breach of the University regulations, may

be found unworthy to be any longer a student of the University, will be promptly dismissed.

14.—A student who fails at any examination and whose failure necessitates his dismissal according to the scheme connected with art. 8 of the regulations for examinations will be dismissed.

15.—When a student, who, on account of sickness or any other cause, was degraded or absent from the annual examination, is found to remain in the same class during two years, he will be dismissed from the University.

16.—When on account of sickness a student shall be found by the physician of the University unable to follow the regular course, he will be dismissed from the University.

17.—Any student, who desires to leave the University on account of sickness or any other cause, may be allowed to do so.

VII.—EXAMINATIONS & CERTIFICATES.

1.—The Annual Examination commences on June 21st (or 22nd if 21st be a Sunday) when students are examined on all subjects studied during the year ; but in case the instruction in any subject is completed in the first or second term, the examination on such subject may be held at once. With regard to laboratory work in the Department of Science the instructors have the option of deciding whether or not such annual examination shall be held.

2.—The term mark for the work done during each term in each subject shall be determined by written

examinations, essays, exercises, or by any other means the instructor may prefer.

3.—The year mark of the student in each subject at the end of each academic year shall be determined by adding twice the average mark for term work to the marks for annual examination, and then by dividing the sum thus obtained by 3. In the case of any subject which is studied during only one term, the year mark of the student in that subject shall be determined in the same way, the term mark being taken as the average mark for the term work.

N.B. In the case of laboratory work, in the Department of Science, when no annual examination is held, the average mark for the term work will be considered the year mark.

4.—The General Average of the student for each academic year is determined by dividing the sum of the year marks (obtained by the method mentioned in the foregoing article) in all the subjects by the number of the subjects.

5.—Each professor or instructor shall report to the Sori the term marks at the end of each term, and the marks for the examination immediately after the annual examination.

6.—At the end of the first and second terms a list of each class is posted arranged in the order of merit, showing the term mark in each subject and the general average for the term. At the end of the academic year, a list is posted in the same way, showing the term average, the final examination mark, the year mark in each subject, and the general average for the year. The names of the students of each class are printed in the

Calendar in the order of their general average for the year.

7.—If, at the end of each term, the general average of any student is below sixty, or if his term mark in any one subject is below thirty, he shall be degraded. If a student fails in consequence of absence or under any other circumstances to obtain the term mark even in one subject, he shall be degraded.

8.—At the end of each academic year students are promoted, degraded, or dismissed according to the scheme given in the following page. Students who have failed in any examination, are not allowed to be re-examined under any circumstances.

GENERAL AVERAGE.	YEAR MARK UNDER 60.			DISPOSITION OF STUDENT.
	Number.	Lowest.	Next Lowest.	
60 to 100	None.			Promoted.
do.	1.	50 to 59+		do.
do.		0 to 49+		Degraded ; $\left\{ \begin{array}{l} \text{If either term} \\ \text{average or} \\ \text{examination} \\ \text{mark is 60 or} \\ \text{over.} \end{array} \right\}$ Promoted.
do.	2.	50 to 59+		Degraded ; $\left\{ \begin{array}{l} \text{If either term} \\ \text{average or} \\ \text{final examina-} \\ \text{tion mark in} \\ \text{either of the} \\ \text{two is 60 or} \\ \text{over.} \end{array} \right\}$ Promoted.
do.	2.	40 to 49+	50 to 59+	Degraded ; $\left\{ \begin{array}{l} \text{If either term} \\ \text{average or} \\ \text{final examina-} \\ \text{tion mark in} \\ \text{both is 60 or} \\ \text{over.} \end{array} \right\}$ Promoted.
do.	2.	0 to 49+		do.
do.	8 or more.	0 to 59+		do.
50 to 59+	1 or 2.	0 to 59+		do.
do.	8 or more.	40 to 59+		do.
do.	do.	0 to 89+		Dismissed.
40 to 49+	1.	0 to 49+		Degraded.
do.	2 or more.	0 to 49+		Dismissed.
0 to 39+	1 or more.	0 to 89+		do.

9.—Students who are absent from the annual examination will not be specially examined, unless their term averages obtained during the year are such as, according to the foregoing scheme, entitle them to such special examination. This special examination is held at the beginning of the next academic year.

10.—Students who are degraded according to article 7 or 8, are required to attend the same class from the first term of the next year and pursue all the subjects studied by that class. They may sometimes be exempted from attending lectures on those subjects which are studied only during one year or a portion of one year, and on which they have passed their examination; but they must be present at all the examinations held during the year.

11.—Any student who is degraded in two successive years shall be dismissed.

12.—At the end of each academic year each student, whose term average and final examination marks are such as entitle him to promotion according to the scheme laid down in article 8 shall receive a certificate. Certificates are of two kinds; one to certify that the student has finished all the studies of one year, and the other to certify that the student has completed his whole course, the former being given to the first, second, and third year students, and the latter to the fourth year students.

VIII.—DIPLOMAS.

1.—The degree of Hō-Gakushi in the Department of Law; that of Ri-Gakushi in the Department of Science;

and that of Bun-Gakushi in the Department of Literature, are granted to students who have completed one course in the respective Departments.

2.—Degrees are granted at the end of each academic year.

IX.—POST-GRADUATE STUDY.

1.—Any graduate of the Departments of Law, Science, and Literature, who may desire to pursue further his studies in the Department in which he has graduated, may be permitted to do so, according to the convenience of the University.

2.—All expenses shall be borne by the student himself.

3.—Books, apparatus, chemicals, etc. are provided for him in the same manner as for undergraduate students.

4.—The length of such study shall not be less than one year and shall not exceed two years under any circumstances.

5.—Such students may live in the University buildings as circumstances may allow.

6.—Tuition fees and bonds from guardians are not required from such students.

7.—On completing these studies the student is required to present a thesis written on the subject which he has pursued, to the professor or instructor of that subject.

X.—ELECTIVE STUDIES.

1.—Applicants, who wish to study one or more of the subjects prescribed for any course in the Department of

Law, Science or Literature, are permitted to do so, as the number of regular students may allow; the English, French, and German languages can not be chosen, unless a knowledge of them is necessary for the study of any special subject chosen by the student.

2.—If any regular student above the first year in any of the Departments of Law, Science, and Literature, having sufficient time and ability to take elective studies, besides satisfactorily pursuing his own course, applies for permission to study not more than two subjects prescribed in any courses as elective, he may be allowed to do so according to the special recommendation of both instructors, those connected with his course as well as those of the elective studies. Those subjects in his course which are pursued by a class higher than his own can not be chosen as elective studies.

3.—Regular students and graduates may choose the English, French, or German language as an elective study.

4.—Applicants for permission to pursue elective studies must be at least eighteen years of age. Regular students who take the elective studies are not subject to this rule.

5.—If former students of the Departments of Law, Science, and Literature, who have left the University, apply for readmission in order to pursue the elective studies, they may be admitted according to the circumstances of the case.

6.—Such applicants, before admission to any classes, must satisfy the respective professors or instructors, of their fitness to pursue the studies selected.

7.—Students, who have entered on the study of any subject, are not permitted to abandon the same in favor

of another subject, until the close of the academic year or the termination of the work of the regular class in that subject.

8.—Students of elective studies are subject to the same examinations and penalties as regular students of the same subjects, and may receive upon application a certificate from the University in case their term and final examination marks are such as to entitle them to promotion according to the scheme of art. 8 of the regulations for Examinations.

9.—The time for admission, the amount of tuition-fee, and rules concerning guardians are the same as those for regular students.

10.—Students of elective studies shall, in general, provide their own text-books, but they may borrow them from the library if there be a sufficient number of extra copies.

11.—Bonds from guardians or tuition-fees are not required in the case of graduates of this University.

12.—All the other regulations of the University to which regular students are subjected, apply in the case of students of elective studies.

XI.—LECTURE-ROOMS & LABORATORIES.

The lecture-rooms and laboratories assigned to professors are put under the care of their respective assistants, or under the care of the secretary of the University.

XII.—LIBRARY.

1.—The University Library is divided into that of the three Departments of Law, Science, and Literature, and that of the Department of Medicine.

2.—The books contained in the library of the said three Departments are provided for use as text-books and books of reference for the said Departments and Yobimon-Honko.

3.—The books contained in the Medical Library are provided for use as text-books and books of reference for the Department of Medicine and Yobimon-Bunko.

4.—No one shall be admitted into the godown of the library of the said three Departments to look for books and take them out of the godown, except the librarians of the said Departments.

N. B. This rule does not apply in the case of the officers and students mentioned in articles 39, 40, and 41.

5.—No one shall be admitted into the godown of the Medical Library to look for books and take them out of the godown except the librarians of the Department of Medicine.

N. B. This rule does not apply in the case of the officers mentioned in article 39.

6.—Both libraries are open for giving out and receiving back books during the ordinary office hours, with the exception of the last ten-minutes.

7.—The Sori, Kanji, and Cho of every Department and also of Yobimon, are entitled to have in their possession, for official purposes, volumes not exceeding ten at one time.

N. B. The number of volumes being counted accor-

ding to the books bound in European style, three volumes bound in Japanese style are counted in all cases as equal to one volume in foreign style.

8.—The books used by the professors or instructors as text-books shall be the same as those which are used by the respective classes.

9.—Every professor or instructor is entitled to have in his possession as books of reference not more than twenty five volumes at one time, but any such person not actually engaged in instructing is entitled to have only ten volumes at one time.

N. B. Every professor or instructor in the Medical Department is entitled to have ten volumes at one time, while each Tochiokui (assistant doctor in the Hospital,) is entitled to have only five volumes at one time.

10.—The books taken out of the library of the three Departments for the use of laboratories, the Meteorological Observatory, the Museum and the Koishikawa Botanical Garden, shall not exceed fifty volumes at one time with exception of the books taken for the use of the Astronomical Observatory; the maps for the lecture-room of History shall not exceed six; the drawings for the Drawing room shall not exceed ten. If a greater number of books, maps, and drawings are required, they may be taken out of the library for one day only, at the request of the professors or assistants of the respective places.

11.—The books taken out of the medical library for the use of laboratories and hospitals shall not exceed twenty volumes.

12.—Any professor or assistant responsible for the books stored in the places mentioned under articles 10 and 11 may remove any of them from those places, if

necessary, by countersigning the record-book provided for that purpose, in which the name of the borrower is recorded. All books thus removed shall be returned next morning.

13.—The books stored in the places mentioned under articles 10 and 11 shall occasionally be examined by the librarians.

14.—Books may be taken out of the library by special permission for the use of any office of the University.

15.—Every officer, professor, or instructor is entitled to have in his possession five volumes at one time for his private use.

16.—In case any officer, professor, or instructor, of the Departments of Law, Science and Literature wishes to borrow any book from the Medical Library, or any one of those of the Department of Medicine from the library of the Departments of Law, Science, and Literature, he shall present to the librarian of that library, from which he desires to borrow a book, a note from the other librarian, in which the number of books already borrowed is mentioned. In order to borrow a book, he must conform to article 19.

17.—Officers, professors, &c., may, by special permission, borrow more than the number of volumes mentioned in Articles 7, 9, and 15.

18.—At the request of Mombusho as well as of the other Departments of the Government books may be taken out of the library in case they are not in use.

19.—Any person borrowing a book from the library shall first deliver a note containing his seal or signature, the title of the book, and the year and day of the month on which such book is borrowed.

For every book taken out for the use of the places mentioned under articles 10, 11, and 14, the officer, professor, instructor, or assistant responsible for it shall deliver such a note.

20.—Every officer, professor, or instructor is generally required to come to the library to borrow a book.

21.—Students who are unable to supply themselves with text-books may borrow them from the libraries upon application. The students in the medical course taught in Japanese, however, are not included under this rule.

N. B. Post-graduate students and Tochiokui-kaiho may borrow books of reference not exceeding ten volumes. In order to borrow a book they must conform to article 22.

22.—For every book borrowed under the preceding article, a certificate is required from the professor or instructor in whose department the book is to be used, that such book is needed by the student. In order to borrow a book the student is required to come to the library and conform to article 19.

23.—If any of the books stored in the places mentioned under articles 10, 11, and 14 be lost, the officer, professor, or assistant responsible for it is required to make known the fact to the librarian of the respective library. When it is uncertain whether such book is lost or not, he shall also inform the librarian of such fact; if he does not find it after six months, he is required again to inform the librarian of the same.

24.—All books borrowed from the libraries shall be returned between the 11th and 20th of July of every year, or oftener if required by the librarian. If any one neglects to return them at the required time, and if after a week from the librarian's notice for such return, he still

neglects to do so, he shall be punished according to the last part of article 58.

25.—The books borrowed by the students of the Departments of Law, Science, and Literature, including the students in Koten-Koshiu-Kua, as well as by those of the Yobimon-Honko, shall be returned within five days from the end of the annual examination, and the books borrowed by the students of the Department of Medicine as well as by those of the Yobimon-Bunko shall be returned within five days from the end of every term examination, or oftener if required by the librarian. If any of the students neglect to return them at the required time, and, if after a week from the librarian's notice for such return he still neglects to do so, he shall be punished according to article 58.

26.—Students may borrow books during the summer vacation upon presenting a certificate from their respective professors or instructors, no one student having out more than five volumes at one time. Students of the Department of Medicine shall have out not more than two volumes.

27.—In case any officer, including professor or instructor, retires from his office, or in case a student leaves the University, he shall immediately return the books which he has borrowed from the libraries. In case an officer, professor, or instructor responsible for the books taken out of the libraries under articles 10, 11, and 14, retires from his office, he shall return such books according to this rule.

28.—The reading room of the Departments of Law, Science, and Literature is divided into four divisions; viz., for officers, professors, and instructors; for the Department of Law; for those of Science and Literature; and

for the Yobimon. The reading room of the Department of Medicine is divided into two divisions, viz., for the officers, professors and instructors; and for the students.

29.—The reading room of the Departments of Law, Science, and Literature is open daily at 7 a. m. and is closed at 9 p. m. from September 11th to October 31st, and from May 1st to July 10th; from November 1st to April 30th, it is open at 7.30 a. m. and is closed at 9 p. m., except on holidays. On Sundays, it is open at 6 p. m. and closed at 9 p. m.

30.—The reading room of the Department of Medicine is open daily at 8 a. m. and closed at 8 p. m., except on holidays.

31.—During the Winter vacation the reading rooms are open from December 25th to 28th, and from January 4th to 7th; during the Summer vacation, they are open from July 11th to 30th, and from August 22nd to September 10th, except on Sundays. During the latter vacation they are open at 8 a. m. and closed at noon.

32.—Every applicant for books belonging to the reading rooms, shall present to the officer in charge of the said rooms, a note containing the title, shelf-mark, and number, of each book as given in the Catalogue, together with the signature of the applicant with the date, in exchange for which note, the books shall be delivered to the applicant. All books, when done with, must be promptly returned.

33.—Students shall not be admitted into other than their respective divisions.

34.—Current numbers of daily papers are placed daily from 1 p. m. upon the reading desks in the division as-

signed for the Yobimon in the library of the Departments of Law, Science, and Literature; and in the division assigned for the students in the Medical library. Old numbers, however, must be borrowed according to article 30.

85.—If officers, professors, instructors or students of the Departments of Law, Science, and Literature desire to be admitted into the reading-room of the Medical library, and those of the Department of Medicine, into that of the library of the Departments of Law, Science, and Literature, they shall present to the librarian of the library into whose reading-room they desire to be admitted, a note, obtained from the librarian of their respective library. Not more than twenty students shall be admitted during any one day into the reading-room of either library under this rule. The special students in the Department of Medicine shall use the division assigned for the Departments of Science and Literature, and the preparatory students shall use the division for the Yobimon.

86.—Former officers who have been in the service of the University more than two years, and the graduates of the University are admitted into the reading-rooms upon presenting the ticket previously given. Those who come to the library of the Departments of Law, Science, and Literature shall use the division assigned for the Departments of Science and Literature.

87.—Any officer of the Mombusho or other Departments of the Government shall be admitted into the reading rooms at the request of such Department.

88.—Well known learned men may be admitted into the reading-rooms at the discretion of the authorities. Any one who is admitted into the reading room of the Departments of Law, Science, and Literature shall use

the division of the Departments of Science and Literature.

39. The sōri, kanji, chō of every Department, and Yobimon, professors, instructors, the secretaries in charge of affairs connected with instruction, and also a limited number of other officers as well as the post-graduate students are admitted into the godown to look for the books desired.

40.—The fourth year students of Law, Science, and Literature, not exceeding five at one time are admitted into the godowns of the library of the Departments of Law, Science, and Literature, for the purpose of consulting books with reference to some special work or their graduating theses. When they come to the library for the above purpose, they must upon entering give to the officer in charge of the reading room the wooden ticket previously received, and receive it back from the same officer on coming out. On finding the books desired, they must immediately come out of the godown, and consult the books in conformity with art. 30.

41.—The law students are admitted into the law library godown to find the books desired, subject to the rule mentioned under article 32. This rule will apply also in the case of former professors or instructors of the Department of Law, and in that of Hogakushi of the University, having special admittance into the law library godown.

42. While in the godown, those, who are admitted into it under the foregoing articles, are required not to disarrange the books and not to offer any impediment to the officer in charge of the reading-room.

43.—The books belonging to the reading rooms are divided at present into the following four classes :

1. Valuable books.
2. Books of reference for the use of all the established courses.
3. Books specially kept in the reading-rooms at the request of the professors or instructors for the use of their respective courses.
4. Books not belonging to any of the above three classes.

44.—No one is allowed unless by special permission to use the books belonging to the first class except those to whose subject of study the books relate.

N.B. In case the books are taken out of the library by special permission for the use of lecture-rooms or laboratories, they must be returned on the same day on which they are borrowed.

45.—No book belonging to the second class shall be taken out except by special permission.

46.—No book belonging to the third class shall be taken out except by the professor or instructor to whose subject of study the book relates, unless by special permission.

47.—Books belonging to the fourth class may be taken out for not more than four weeks.

48.—Nothing shall be carried into the reading-room except books, paper, pen and ink.

49.—Loud talking, reading aloud, discussion, smoking, &c., which disturb others are not allowed in the reading-room.

50.—Books, newspapers, and periodicals must not be taken out of the reading-room.

51.—If any book in the hands of the borrower (except the books borrowed according to articles 10, 11, and 14,)

be damaged, the borrower shall make it good or shall replace it with another of the same edition and of equal value.

52.—If any book in the hands of the borrower (except the books borrowed according to articles 10, 11, and 14,) be lost, the borrower shall as soon as possible replace it with another of the same edition and of equal value. This rule will also apply in the case mentioned in article 12.

53.—A person who violates any of the foregoing articles, shall be deprived of the privilege of admittance to the reading-rooms, or of that of borrowing any book whatever, (all books in his hands being called in,) or deprived of both privileges, for a period not exceeding one year thereafter, according to the nature of the case.

N.B. Any officer, professor, or instructor who violates article 24 shall be deprived of the privilege of borrowing any book whatever for his private use, for a period not exceeding one year thereafter according to the nature of the case.

XIII.—MUSEUM.

1.—The collections in the Museum are provided for lecture-illustration, and for examination by students in the Department of Science.

2.—The Museum is divided into eight cabinets, namely,

1. Mineralogical Cabinet.
2. Geological and Paleontological Cabinet.
3. Zoological Cabinet.
4. Botanical Cabinet.
5. Archæological Cabinet.
6. Chemical Technology Cabinet.
7. Civil and Mechanical Engineering Cabinet.
8. Mining and Metallurgical Cabinet.

3.—The classification and arrangement of specimens in each Cabinet are under the charge of the keeper who is required to consult previously with the professors or instructors as to the classification and arrangement of specimens of their respective departments.

4.—No one is allowed to touch or handle any specimen in the cabinets, except the professors or instructors of the respective departments. In case any professor or instructor desires to take specimens out of the cabinet of his own section, he shall first inform the keeper of his desire.

5.—The Museum is open to students daily from 9 A. M. to 4 P. M. During this time students are admitted into the Museum upon presenting written permits signed by the professor or instructor of their respective courses. Students are allowed to touch or handle only such specimens as are connected with their respective courses.

6.—Persons wishing to visit the Museum are admitted without tickets every Sunday from 9 A. M. to 4 P. M. On Sundays which are national holidays, during the twenty days from July 20th to August 8th, and during the winter vacation, it is not open to the public.

7.—Visitors must observe the following rules :

No one is allowed to touch or handle any specimen.

Visitors must wear shoes or *zori* (straw sandals).

No one is allowed to bring a dog into the building.

Smoking is not allowed in the building.

XIV.—APPARATUS, CHEMICALS, &c.

1.—Instruments, apparatus, chemicals, and other articles provided for the use of lecture-rooms, laboratories, the Astronomical Observatory, the Meteorological Ob-

servatory, the Koishikawa Botanical Garden, Hospitals, and other offices of the University, may be borrowed by a responsible person upon giving the officer in charge of them a receipt executed according to article 6. The instruments and apparatus borrowed for temporary use shall be returned promptly when done with, but those for constant use may be stored in the above named places.

2.—No student shall use or take out those instruments, &c., which are borrowed for the use of the places mentioned under the preceding article, without permission of a person responsible for the respective instruments, &c.

3.—Students who are unable to furnish themselves, with instruments, &c., may borrow them upon application. For this purpose students shall give the officer in charge of instruments, &c., a note according to article 6.

Students of the medical course in Japanese may borrow the apparatus while they are in the lecture-rooms only.

4.—A certain limit of the amount of chemical apparatus to be used by the students shall be previously fixed by the responsible professors or instructors in the laboratories and the officer in charge of the instruments, apparatus, chemicals, &c. Though the amount of apparatus broken exceeds the limit, yet students may be furnished with the apparatus further needed, provided that such article broken be replaced by the students afterwards with one of the same kind and of equal value.

5.—Students shall be furnished with chemicals and other articles needed, upon presenting to the officer in charge of instruments, apparatus, &c. a record book provided for the purpose, according to article 6.

6.—Every person borrowing or receiving any instrument, apparatus, chemicals, or other articles, shall give

the officer in charge of instruments, apparatus, &c. a note containing the name of such instrument, apparatus, or article, their number or quantity, and the date, together with his name and signature.

Such note given by a student shall be countersigned by the professor or instructor of the respective lecture-rooms or laboratories.

7.—No instrument, apparatus, chemicals, or any other articles borrowed or received by the students shall be taken out of the lecture-rooms or laboratories without permission of the professors or instructors of the respective rooms or laboratories, except the magnifying glass and drawing instruments.

8.—In case any professor, instructor, or student desires to take with him any instrument, apparatus, or chemicals upon scientific excursions, he is required to send to the office of instruments, apparatus, and chemicals, a written application containing the name of the instrument, apparatus, or chemicals, and the number or quantity required. To borrow the same instrument, apparatus, or chemicals, after permission is given he must comply with article 6, and in case the same instrument, &c. be lost or broken, with article 13 or 14.

9.—If students use the surveying instruments whether in the University grounds or out of it, one student representing the whole class shall give the officer in charge of instruments a note according to article 6.

10.—Instruments and apparatus stored in the places mentioned under article 1 shall be examined once a year by the officer in charge of them.

11.—Instruments and apparatus borrowed by students shall be returned, in the Department of Science, within

three days from the end of the annual examination, and, in the Department of Medicine, also within three days from the end of each term examination; those for temporary use shall be returned when done with. In the Department of Medicine, students may borrow at one time only one set of apparatus for temporary use, and they are not allowed to borrow other apparatus unless they return the apparatus already borrowed.

12.—Instruments, apparatus, and chemicals, taken by the professors, instructors, or students, for excursions shall be returned immediately after their return to Tokio.

13.—If the apparatus borrowed by students be broken, they shall report the fact to the officer in charge of it, returning also the broken pieces, otherwise they are not allowed to borrow apparatus even within the limit mentioned under article 4. In case the apparatus be lost, they are required to replace it with apparatus of the same kind and of equal value.

14.—If instruments borrowed in the places mentioned under article 1 be broken or lost, the facts must be reported to the office of instruments, apparatus, and chemicals, and after the facts are examined by the officer in charge of them, the professors or instructors responsible for them shall or shall not be required to replace them with instruments of the same kind and of equal value, according to the circumstances of the case. This will apply in the case of chemicals of great value, and also of apparatus when lost; while, in case of breakage, the broken pieces shall always be sent to the office of instruments, apparatus, and chemicals, together with a report of the facts in the case.

15.—Students are required to clean the borrowed

instruments or apparatus and keep them in good order. If through negligence the apparatus becomes out of order, the students are required to pay the expense of cleaning or repairing, but if destroyed, they must replace it with apparatus of the same kind and of equal value. The professors or instructors are required to superintend the instruments, apparatus, and chemicals, borrowed by the students under their charge.

16.—If instruments, apparatus, or chemicals, of great value borrowed by the students, are broken or lost, the facts shall be reported to the office for instruments, apparatus, and chemicals, and after the facts are examined by the officer in charge of such instruments &c., the students are required to replace them with instruments &c. of the same kind and of equal value. The above report must be countersigned by the professors or instructors of the respective lecture-rooms or laboratories.

17.—All applications for purchase or repairs of any instrument, apparatus or chemical used in the lecture-rooms or laboratories shall be made at the office of the same.

18.—Any thing made at the lecture-rooms or laboratories by using materials belonging to the University shall be sent afterward to the office, to which it properly belongs, and shall not be taken possession of by any person, unless special permission is given.

XV.—ASTRONOMICAL OBSERVATORY.

The Astronomical Observatory of the Department of

Science is situated at Motofujichō, Hongō, and its approximate position is

Latitude, $-35^{\circ} 42' 40''$.

Longitude, $9^{\text{h}} 19^{\text{m}} 4^{\text{s}}$ East of Greenwich.

The instrumental equipment is as follows :—

1st.—An equatorial telescope of 8 inches aperture by *Traughton and Simms* of London, fitted with driving clock, filar micrometer, double-image micrometer, and a good assortment of eye-pieces. This instrument has been recently loaned to the Observatory by the Surveying Bureau of the Interior Department, and will be set up in the dome of the Observatory as soon as the top of the dome can be rebuilt. In the meantime, in the workshop attached to the Observatory, are being made the necessary adapters, counterpoises, &c., for attaching a small *Browning* spectroscope, and also a frame for a diffraction spectroscope, on which to use the collimating, and observing telescopes and the *Rutherford* gratings belonging to the spectrometer of the Physical Department. Also two photometers, which have been ordered of *Alvan Clark and Sons* of Cambridge, Mass., U. S. A., for the 5 inch equatorial, will be fitted to the 8 inch when they arrive.

2nd.—A 5 inch equatorial by *Clark and Sons* fitted with declination and hour circles and negative eye-pieces, but without clock-work or any other accessory apparatus. This stands at present in the dome, but is to be removed to make place for the 8 inch. As some observations of considerable value can be made with this telescope, it is desirable to remount it in a small dome on the ground, near the main Observatory and adapt to it such apparatus

of the 8 inch telescope as can be employed to advantage on a 5 inch without clock-work.

3rd.—A 4 inch telescope by *Henry Fitz* of New York, with an excellent set of negative eye-pieces, and mounted on a movable equatorial stand, the whole easily carried on the shoulder and set up temporarily anywhere out of doors.

4th.—A small transit instrument of 2.5 inches aperture by *Edward Kübel* of Washington, which can also be used as a zenith-telescope for the determination of latitude. This is mounted on a stone pier in the transit-room east of the dome.

5th.—Four sextants (two of them new ones, the third in fair condition, and the fourth good for nothing for accurate measurement) and two artificial horizons.

6th.—A large chronograph by *Dent* of London, loaned by the Surveying Bureau. This is useless in its present condition, but, as it is the only chronograph available at present for the use of the Observatory, an attempt will be made to make it useful as soon as the Director can get time to plan the changes in it. The Observatory very much needs three or four chronographs of the light American pattern.

7th.—Four *Negus* break-circuit chronometers (3 sidereal and 1 M. T.) and two *Frodsham* chronometers (1 sidereal and 1 M. T.), three of the *Negus* ones new and the others in fairly good condition.

8th.—A limited amount of electrical apparatus and battery material, of which much more is needed before all the instruments can be put in fairly good working condition.

The workshop is busily employed in making small

changes in instruments, adapters for attaching apparatus to the telescopes, &c., &c., and much of the Director's time is required in planning the necessary work.

Rooms for a library, chronograph, chronometers and batteries, a lecture-room, studies for Professor and Assistant Professor, and a small store-room have been added to the buildings during the last year, so that all the work, theoretical and practical, can now be carried on at the Observatory.

The astronomical work during the past year has been confined to the instruction of the Astronomical, Physical, and Engineering Students, in the use of the transit, zenith-telescope and sextant in the determination of time and latitude, and a determination of the latitude by the zenith-telescope by one of the astronomical students, giving as the result for the latitude of the Observatory.

$$\phi = +35^{\circ}42'39''.92 \pm 0''.17$$

A small prismatic transit of 75 mm. aperture to be used also as a zenith-telescope, has been ordered of *Ertel & Sohn* of München, and will be mounted some time during 1883 in a new transit room.

When the 8 inch equatorial is mounted and ready for use, it is expected that active work will be taken up on the sun, photometry of variable stars, observations of comets, occultations of stars by the moon and the eclipses of Jupiter's satellites, thus making good use of the isolated position of Japan with reference to other Observatories and securing valuable observations which would otherwise be lost.

XVI.—METEOROLOGICAL OBSERVATORY.

The Meteorological Observatory of the Department of Science is situated at Motofujicho, Hongo. The instruments in use are such as are ordinarily found in a meteorological observatory. Regular observations at fixed hours in the day are maintained. Annual reports are published containing tables of the observations with charts and diagrams exhibiting the meteorological phenomena for the year. In addition to this a monthly chart is published in the *Gakugei-shirin* and a weekly diagram in one of the English newspapers. All students of the Department of Physics have free access to this observatory for purposes of study or investigation.

XVII.—KOISHIKAWA SHOKUBUTSUYEN.

(Koishikawa Botanical Garden)

1.—The Botanical garden belonging to Tokio Daigaku is under the control of the Department of Science, and is designed for the use of the students of Tokio Daigaku and the Yobimon, as the place for their practical work in Botany. Others also are allowed to visit the garden on complying with the following rules.

2.—All persons desiring to visit the garden receive tickets of admission from the gate-keeper and are to return the same on leaving.

3.—No horses, dogs, carriages, *geta* or *hiyorigeta* (Japanese shoes) are allowed in the garden. Straw sandals are provided instead of *geta* or *hiyorigeta*.

4.—Professors, teachers, or students of Tokio Daigaku or the Yobimon, who are connected with the department

of Botany, may obtain at the office of Tokio Daigaku a special permit allowing them to pluck flowers, &c., for the purpose of practical study in Botany.

5.—Flowers and branches of plants or trees are not allowed to be plucked by visitors. This rule does not apply to those who bring a special permit approved by the officer of the garden.

6.—From May 1st to September 30th, the garden is open daily from 8 a.m. till 5 p.m., and from October 1st to April 30th it is open from 9 a.m. till 4 p.m. Those who bring special permits may be admitted at other times.

7.—The drinking of intoxicating liquors is not allowed in the garden.

XVIII.—EXPENSES.

1.—The necessary expenses of one student in the boarding house including the tuition fee, the cost of living, fire and light, are about six yen per month.

2.—The tuition fee of each student for one term is four yen which must be paid to the treasurer of the University within twenty days from the beginning of each term. The fee thus paid shall not be returned to any student in case of his absence or departure from the University, under any circumstances. Newly admitted students, other than students admitted from the Yobimon, are required to pay the fee within twenty days from the day of their admission.

3.—If any student is unable to pay the fee, he may be permitted to pay a half or quarter, or the fee may be altogether remitted, in case he applies for it.

OFFICERS.

HIROYUKI KATO, Seri.

KENSAI IKEDA, Sori-Kokoroye.

TADANORI ISHIGURO, Sori-Hojo.

ICHIZO HATTORI, B. Sc., Kanji.

DEPARTMENT OF LAW.

HOGAKUBUCHO.

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KIOJU (PROFESSORS).

HENRY T. TERRY, B. A., Counsellor-at-Law.

English Law and Roman Law.

NOBUSHIGE HODZUMI, Barrister-at-Law.

English Law, Jurisprudence, and Encyclopedia of Laws.

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Ancient and Modern Japanese Law.

KARL RATHGEN, Dr. Rer. Pol.

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KOSHI

KUNIOMI YOKOTA.

Present Japanese Criminal Procedure.

SEIRI TAMANO.

Present Japanese Civil Procedure.

AKIRA TSURUDA.

Present Japanese Criminal Law.

MASAKOTO KEMURA.

Ancient Japanese Law.

SEIGO KURIDZURA, Licencié en droit à la faculté de
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Chinese Literature.

WILLIAM D. COX.

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Ancient Japanese Law.

TATSUJIRO INOUE, Bungakushi.

History.

JUN-KOSHI.

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INAGI TANAKA, Bungakushi.

Japanese Literature.

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RIGAKUBUCHO.

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JOJI SAKURAI, F. C. S.

*Analytical Chemistry, Inorganic Chemistry,
and Chemical Philosophy.*

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KEISUKE ITO.

Botany.

TOKAI NAGAMATSU.

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Assaying, Blowpipe Analysis, and Metallurgy.

ADOLPH MEZGER, Berg-und Hütten Ingenieur.

Mining and Metallurgy.

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JOKIOJU.

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JUN-KOSHI.

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CHIYOMATSU ISHIKAWA, Rigakushi.

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DEPARTMENT OF LITERATURE.

BUNGAKUBUCHO.

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MASAKAZU TOYAMA.

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Philosophy and Political Economy.

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Chinese Literature and Chinese Philosophy.

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Jurisprudence and Encyclopedia of Laws.

KIYONORI KONAKAMURA.

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Teishichi Nakahara.	

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Unto Kurokawa.	Yujiro Takemura.
Tsunekuni Mihara.	

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Ichizo Nagasawa.	Fujiro Sagane.

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SECOND YEAR STUDENT.

Chokuon Miyake.

FIRST YEAR STUDENT.

Tsunetaro Toda.

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Yukinobu Amenomiya.	Kokichi Ota.
Tomo Toyota.	Yoshishige Matsumoto.
Yoshiyuki Hagino.	Seijiro Nagahara.
Michisaburo Ishida.	Kamasaburo Wakamatsu.
Sumio Miura.	Mitsuaki Hashimoto.

Yoshikata Ikebe.	Masanao Sekine.
Genjiro Ishiwara.	Motohiko Hattori.
Bokuro Takagi.	Yutaka Ogushi.
Morisada Tozawa.	Masajiro Inouye.
Kotaro Yasui.	Shonoske Sorimachi.
Tanesaburo Okudaira.	Teiske Sato.
Ichio Oinuma.	Naoye Uchiyama.
Yoshimoto Inouye.	Gemmei Kameyama.
Shigehisa Suzuki.	Tatsumi Yamada.
Hajime Ito.	Yutaka Saito.
Nakaba Kamo.	Hikosaburo Imai.
Hiraaki Ito.	Hidetaro Oda.

ELECTIVE STUDENTS.

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- Tsunetaro Shionoya. Encyclopedia of Laws, Roman Law, Logic, and Chinese Literature.
- Hiroto Tomidzu. Encyclopedia of Laws, Roman Law and French.
- Tokugoro Saito. do.
- Morizo Kurosumi. Encyclopedia of Laws, and Criminal Law.
- Harumitsu Miyahara. Encyclopedia of Laws.
- Tota Yasuda, Rigakushi. Chemistry.
- Kumazo Tsuboi, Bungakushi. Chemistry, Physics, Blowpipe Snalysis, and Mineralogy.
- Atsutsuke Nagamatsu. Botany and German.
- Megumi Sugimoto. Mining and Metallurgy.

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Yu Murakami. do.

Toshiakira Kawano. Political Science, Political Economy, and History.

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Kinejiro Akechi. History and Japanese Ancient Law.

GRADUATES.

HOGAKUSHI.

	Graduated
Tetsujiro Nishikawa	2538 (1878)
Takasaburo Fujita	„ „
Kinichi Kawakami	„ „
Shigeaki Hatakeyama	„ „
Chinkichi Nomura	„ „
Masahisa Motoyama	„ „
Rokuichiro Masujima	2539 (1879)
Kenzaburo Ohara	„ „
Masaichiro Oyagi	„ „
Kazumasa Takahashi	„ „
Hakaru Isono	„ „
Genzo Akiyama	„ „
Yutaro Yamashita	„ „
Michinari Suyenobu	„ „
Tsunenori Miyake	„ „
Michisaburo Miyazaki	2540 (1880)
Hajime Motoda	„ „
Saburo Murayama	„ „
Kinzaburo Ono	„ „
Takanosuke Iriye	„ „
Takaaki Kato	2541 (1881)
Masanori Akiyama	„ „
Masamichi Aikawa	„ „
Gentaro Okada	„ „
Teiichiro Matsuno	„ „
Takesaburo Yu	„ „

Mitsuyoshi Suzuki	2541	(1881)
Sakichi Sakaguchi.....	”	”
Sansei Uchida.....	”	”
Yasushi Hijikata.....	2542	(1882)
Kamenoske Misaki.....	”	”
Katsutaka Sunagawa.....	”	”
Kinoske Yamada	”	”
Asaka Watanabe	”	”
Chikamoto Miwa	”	”
Kanekichi Okayama.....	”	”
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Riosaku Fukuda.....	”	”
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Toyota Ishido.....	”	”
Mitsuzo Hida.....	”	”
Kenjiro Ota.....	”	”

Yeijiro Watanabe.....	2589 (1879)
Yataro Kitamura.....	„ „
Yoshimasa Koga	2540 (1880)
Hikorokuro Yoshida.....	„ „
Iwao Ishikawa	„ „
Monoshiro Moriya.....	„ „
Yuzuru Watanabe.....	„ „
Osamu Matsumoto.....	„ „
Osamu Hisata.....	2541 (1881)
Seizo Imai	„ „
Tsuneshichiro Kato.....	„ „
Gentaro Takahashi	„ „
Toyokitsu Uyeda.....	2542 (1882)
Yataro Ishikawa.....	„ „
Harumi Sawabe	„ „

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BIOLOGY.

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Chiyomatsu Ishikawa.....	2542 (1882)

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Wataru Usui.....	” ”
Busuke Nojiri.....	” ”
Yasuto Koshiba.....	2540 (1880)
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Teizaburo Nakahara.....	2542 (1882)
Kiozo Kumakura.....	” ”
Takeshi Miura.....	” ”
Katsura Nagasaki.....	” ”

MINING AND METALLURGY.

Wataru Watanabe.....	2539	(1879)
Shachio Kawano.....	„	„
Ichizo Okada.....	„	„
Rentaro Hotta.....	2541	(1881)
Kageyoshi Noro.....	2542	(1882)
Shinji Harada.....	„	„
Yoshitada Oki.....	„	„
Yoshinori Wada.....	„	„
Kioda Oyagi.....	„	„

GEOLOGY.

Bunjiro Koto.....	2539	(1879)
Tadatsugu Kochibe.....	2540	(1880)
Denkichi Yamashita.....	„	„
Matsujiro Nishi.....	„	„
Takao Fujitani.....	2541	(1881)
Matajiro Yokoyama.....	2542	(1882)
Kenzo Nakajima.....	„	„
Akira Yamada.....	„	„

PHYSICS (FRENCH).

Hisashi Terao.....	2538	(1879)
Yoshitaka Sembon.....	„	„
Teiji Nobutani.....	„	„
Kiyoshi Nakamura.....	„	„
Fusaki Sakurai.....	„	„
Masashi Namba.....	2539	(1879)
Kiyoo Nakamura.....	„	„

Umekichi Yatabe.....	2539	(1879)
Yuji Wada.....	„	„
Susumu Samejima.....	„	„
Munenori Takanose	„	„
Shiuye Toyota	„	„
Kanichiro Miwa	2540	(1880)
Mamori Mimori.....	„	„
Tokusaburo Kiriyama.....	„	„
Jimmatsu Shioda	„	„
Unari Kobayashi.....	„	„
Tadamoto Sawano.....	„	„
Teizo Namura.....	„	„
Tota Yasuda	„	„

BUNGA KUSHI.

PHILOSOPHY, POLITICAL SCIENCE AND POLITICAL ECONOMY, AND JAPANESE AND CHINESE LITERATURE.

Kenzo Wadagaki <i>c.a.</i>	2540	(1880)
Tetsujiro Inouye <i>a.b.</i>	„	„
Shinsaku Koderu <i>a.b.</i>	„	„
Kiyomi Chikami <i>a.b.</i>	„	„
Sadanaga Koba <i>b.c.</i>	„	„
Keizo Nakakuma <i>b.c.</i>	„	„
Kakuzo Okakura <i>b.c.</i>	„	„
Takasuye Fukutomi <i>c.a.</i>	„	„
Seiichi Suyeoka <i>c.a.</i>	2541	(1881)
Kumazo Tsuboi <i>b.c.</i>	„	„
Keiroku Tsuzuki <i>b.c.</i>	„	„

Kojiro Tatsumi <i>a.b.</i>	2541 (1881)
Harugoro Kano <i>b.c.</i>	„ „
Inagi Tanaka <i>d.</i>	„ „
Nagao Ariga <i>a.</i>	2542 (1882)
Sanaye Takata <i>b.c.</i>	„ „
Ichiro Yamada <i>b.c.</i>	„ „
Tameyuki Amano <i>b.c.</i>	„ „

STUDENTS SENT ABROAD.

TO ENGLAND.

2539* (1879).

Isoji Ishiguro, Rigakushi.

2540 (1880).

Kenzo Wadagaki, Bungakushi.

2542 (1882).

Riosaku Kuri, Rigakushi.

TO FRANCE.

2539 (1879).

Hisashi Terao, Rigakushi.

2540 (1880).

Masashi Namba, Rigakushi.

a. Graduates of Philosophy.

b. „ „ Political Science.

c. „ „ Political Economy.

d. „ „ Japanese and Chinese Literature.

* Year of sending.

TO GERMANY.

2540 (1880).

Bunjiro Koto, Rigakushi.

2542 (1882).

Isao Iijima, Rigakushi.

Keiroku Tsuzuki, Bungakushi.

Wataru Watanabe, Rigakushi.

SUMMARY OF STUDENTS AND
GRADUATES.

DEPARTMENT OF LAW.

Law..... 42

DEPARTMENT OF SCIENCE.

Mathematics.....	8
Physics... ..	7
Chemistry.....	19
Post Graduate.....	1
Biology.....	4
Astronomy.....	1
Engineering.....	15
Post Graduate.....	1
Geology.....	5
Mining and Metallurgy.....	8
First year Science—All Courses.....	17
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